

# MARINE REVIEW.

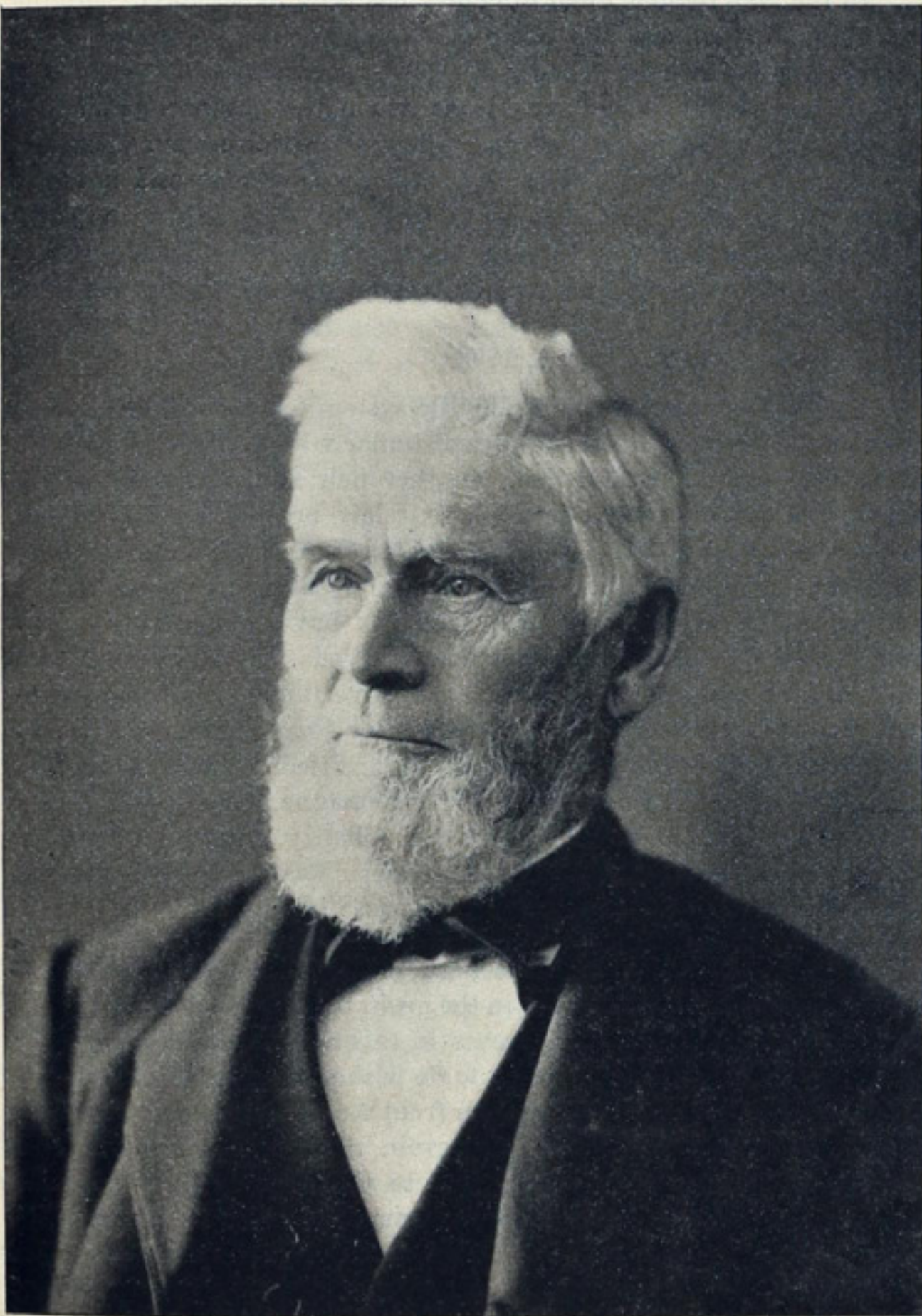
VOL. XIV.

CLEVELAND, O., AUGUST 20, 1896.

No. 8.

## Capt. W. B. Guyles.

Capt. W. B. Guyles, who died in Cleveland on Thursday last, was best known on the lakes as an insurance inspector. He was one of the old-time vessel captains on the lakes, but had been connected with the insurance business in Cleveland for a great number of years



before his death. His interest in marine matters was at all times of a public-spirited kind and he had much to do with the work of securing appropriations for the Cleveland breakwater and for other public works. Capt. Guyles was born in Ripley, Chautauqua county, N. Y., on October 21, 1815. He was the son of Simeon and Hester Guyles, of Scotch descent. His parents were in poor circumstances and his educational advantages were accordingly small. At the age of sixteen he went to sea, shipping before the mast for three years. By the time he had reached his majority he was master of a ship, which position he held for nineteen years on various vessels. During all his sailing career it is a notable fact that he never had an accident that resulted in the loss of life, or of any large amount of property. He was a most careful master. After quitting an active marine life he became marine inspector for the Commercial Mutual & Merchants Insurance Co., in which capacity he served for twenty years.

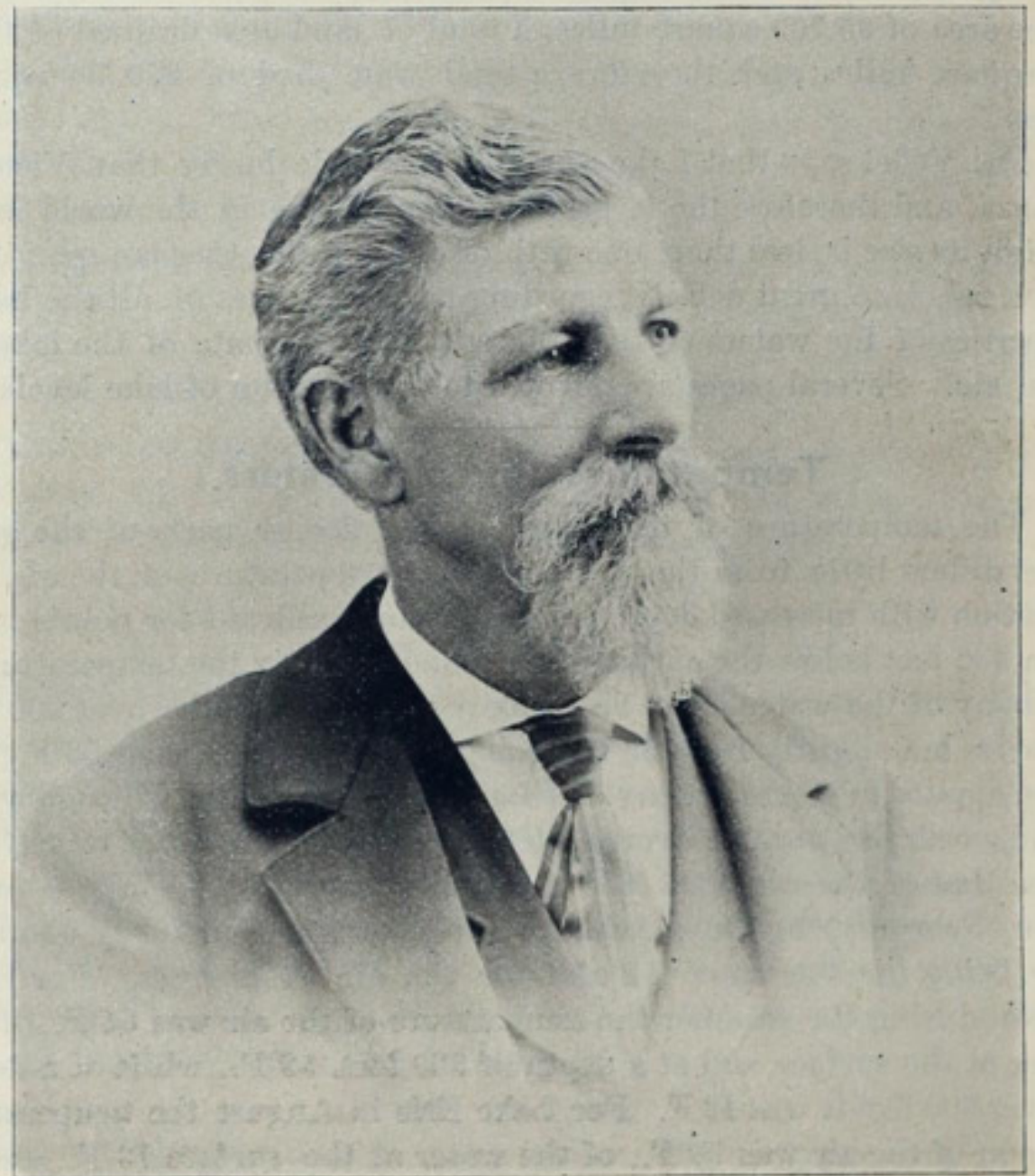
The wreck of the schooner Little Wissahickon has been reported by numerous steamer captains as lying 33 to 35 miles approximately E. & N. from Point Pelee, Lake Erie. The top masts are 5 or 6 feet out of the water. As the schooner lies very near the track between Point Pelee and Erie, mariners are cautioned to exercise care to avoid fouling their propellers with the wire rigging of the schooner.

## Thomas E. Quayle.

Thomas E. Quayle, another member of the family of Quayles, father and sons, who were leaders in the wooden ship building industry in Cleveland for nearly half a century, died at his home, No. 79 Bolton avenue, Cleveland, on Saturday last. Mr. Quayle suffered from Bright's disease and was confined to his home for some time before his death.

Thomas E. Quayle was born July 26, 1836, in Newburg, O., in a log house erected by his father, the late Thomas E. Quayle, in the midst of the forest on the fifty acre tract known as the Wind Fall farm, so named because a few years before a tornado had passed over and felled many trees, thus partly preparing the place for habitation. When ten years old the family moved to Cleveland, where he received his education in the public schools. For more than forty years he was connected with the ship building industry of Cleveland, and for ten years was senior member of the firm of Thomas Quayle's Sons. He was well and deservedly known on the entire chain of lakes, and many of the staunchest wooden vessels in the lake fleet are examples of his designing and careful construction.

In 1858 he sailed for Europe on the barge D. C. Pierce, one of a large fleet of lake vessels loaded with oak staves consigned to English ports. After disposing of the cargo, the vessel was engaged in the grain trade between the Mediterranean and Black seas and England. About the time of the breaking out of the war, the Pierce was bound from Havana to London, with a cargo of sugar. When off Cape Hatteras she encountered a storm and put into Norfolk, Va., in distress. While in dock receiving repairs Fort Sumter was fired on. Excitement ran high and feeling against the north was greatly intensified. Upon leaving the dock, a body of southern troops boarded her and scuttled and sank her in the harbor of Norfolk. The crew escaped in a small boat and went on board the United States frigate Minneapolis anchored



in Hampton roads, where all enlisted. Mr. Quayle was assigned to the United States gunboat Whitehead as master's mate. The Whitehead belonged to the blockading fleet. While in this service he fell ill from malarial fever, from the effects of which he never really recovered. He was modest and unassuming and was well respected by a large number of friends and acquaintances. Mr. Quayle leaves a widow and two daughters.



### Interesting Facts About the Lakes.

Within the past few years the United States weather bureau and the hydrographic bureau of the navy department have collected and distributed a great deal of information relative to areas, coast lines, depths, etc., of the great lakes. They have dealt also with such phenomena as currents, variations of levels, etc. But the most elaborate collection of notes on the hydrology of the lakes that we have as yet seen is contained in a paper by P. Vedel, member of Western Society of Engineers, and which is published in the June number of the journal of that society. About 5,500 cubic miles, or perhaps one-half of all the fresh water in rivers and lakes on the surface of the globe, are stored in the great lakes. Of some 270,000 square miles of catchment basin surrounding the lakes about 96,000 square miles are covered by the lakes themselves. Over 88,000 square miles of this water expanse form the area of the upper lakes, dammed up by Niagara to about 600 feet above tide water.

The lakes cover about one-third of their total drainage area and are fed by only short and relatively unimportant streams. The figures contained in the following table give the dimensions, areas, depths, levels, etc., of the chain of lakes and connecting rivers:

	Length, miles.	Average width, miles.	Maximum width, miles.	Shore line, miles.	Water area (including islands), sq. miles.	Average depth, feet.	Maximum depth, feet.	Surface above tide-water, feet.	Deepest point above tide-water, feet.	Water volume, cub. miles.	Land area of watershed, sq. miles.	Aggregate water and land area of watershed, sq. miles.
Lake Superior.....	390	70	160	1300	31200	475	1008	602	-406	2800	51600	82800
St. Mary's river.....	53	2½	5½	100	200	.....	53	.....	.....	.....	800	1000
Lake Michigan.....	335	58	85	875	20200	335	870	581	-289	1290	37700	60100
Green bay.....	115	15	21	260	1700	95	144	581	+437	30		
Mackinac straits.....	30	16	23	60	500	75	234	581	+347	7		
North channel.....	110	12	18	220	1400	70	240	581	+341	20	31700	55700
Lake Huron.....	250	54	100	725	17400	210	702	581	-121	650		
Georgian bay.....	120	40	58	390	5200	170	462	581	+119	170		
St. Clair river.....	25	1	.....	70	30	.....	.....	.....	.....	.....	3800	3830
Lake St. Clair.....	19	25	29	90	410	.....	21	575	+554	1	3400	3810
Detroit river.....	27	2	3½	54	60	.....	.....	.....	.....	.....	1200	1260
Lake Erie.....	250	40	58	590	10000	70	204	573	+369	130	22700	32700
Niagara river.....	34	1	2	70	60	.....	.....	.....	.....	.....	300	360
Lake Ontario.....	180	40	58	600	7300	300	758	247	-491	410	21600	28900
St. Lawrence river.....	760	20	95	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	.....	.....	.....	5404	95690	.....	.....	.....	.....	5508	174800	270460

The table shows that without including St. Lawrence river, the lake system has a total length of shore line of 5,400 miles, a total water area of 95,700 square miles, a total of land area drained of 174,800 square miles and, therefore, a total watershed of 270,500 square miles.

Mr. Vedel says that Lake Superior is a little larger than Victoria Nyanza, and therefore the largest fresh water lake in the world, even though its size is less than one-fifth of that of the Caspian sea. The paper goes into great details regarding the shore lines of all the lakes, properties of the waters of the different lakes, climate of the lake region, etc. Several pages are devoted to the question of lake levels.

### Temperatures of Lake Waters.

The temperature of the water in the deeper parts of the great lakes differs little from the mean annual temperature of the air, the variation with increased depth being quite insignificant for points more than 400 feet below the surface. In Lake Superior the temperature of the body of the water never rises above 46°F.; at depths over 200 feet it varies but slightly from 39°F., going sometimes as low as 33°F.; the same applies to Georgian bay. In Lake Michigan at the Chicago water in-take crib the annual average temperature of the water was 47°F., when that of the air was 48°F.; the total variation from the minimum (February) to the maximum (July, August) monthly temperature being for the water 34 and for the air 52 degrees. For Lake Huron during the summer the temperature of the air was 64°F., of the water at the surface and at a depth of 300 feet, 52°F., while at a depth of over 600 feet it was 42°F. For Lake Erie in August the temperature at noon of the air was 76°F., of the water at the surface 73°F., and at the bottom, at a depth of 80 to 100 feet, 53°F.

The Blue Book of American Shipping answers questions that arise daily in every vessel agent or owner's office. If the book is not satisfactory it costs nothing, as the \$5.00 will be returned. Order at once, No. 409 Perry-Payne building, Cleveland.

Excursion rates to Omaha via the Nickel Plate road, August 16 to 24th account of the Y. P. C. U. of U. S. Inquire of agents. 230 23.

### The Belleville Boiler's Success.

To the Editor MARINE REVIEW:—The controversy between the builders of the Scotch type of boilers and those of the Belleville has found its solution; the new steamer for the New Haven-Dieppe route will be fitted with Belleville boilers like those of the *Tamise*. My own impressions received while a passenger on board the *Tamise* were that the engineering was at fault. This proved to be the fact later on, and on correcting this, the economy and efficiency were so apparent that the new steamer will be equipped with Belleville boilers. At this time there is also the grand record made by the 25,000 horse-powered *Terrible* with her Belleville boilers. This disposes of the hopes of the tubular tank builders so far as Her Majesty's Navy is concerned, and in confirmation of your editorial of July 30.

In the lake regions great difficulty has been experienced with the stokers, who dominate the fire room almost to the exclusion of the engineering department. These will, however, readily adapt themselves to the somewhat changed conditions when the engineers find they must apply themselves to the important matter of fire-room attention, and realize that its importance is a first consideration and not to be controlled by ignorance. It results from this that only by a system with proper discipline can the fires be charged and the air admitted in such proportions as to promote combustion and secure an economic expenditure of fuel.

M. CORYELL.

Niagara, N. Y., Aug. 6, 1896.

Russia has accepted the Belleville system for the Imperial yacht *Standart*, the cruiser *Rossia*, and two similar vessels of 11,000 tons displacement each; the *Svietlana*, another new ship, and also in the *Kherson* of the Volunteer fleet where it has proved a great success. The Austrians are putting Belleville boilers in an armorclad, the *Buda Pest*; the Italians put them in the *Jose Garibaldi*, now purchased by the Argentine government; the Chilians have adopted them for a cruiser, and the Japanese for the new *Chiyoda*. It is, however, and naturally, in the French service, both government and mercantile, that we find its greatest use, and this after long experience. In the French navy the following ships are now fitted or about to be fitted with this boiler: *Bremus*, *Bouvet*, *Charlemagne*, *Gaulois*, *St. Louis*, *Admiral Trihouart*, *Latouche*, *Trevelle*, *Chanzy*, *Admiral Chevreuier*, *Briux*, *Bugeaud*, *Pothuan*, *Alga*, *Descartes*, *Pascal*, *Galilee*, *Catinat*, *Lavosier*, *Protet* and many smaller vessels. [Editor].

Capt. W. P. Henry of the Lehigh Valley Transportation Co. is of the opinion that the falling off in the grain trade between Chicago and Buffalo, or rather a lack of increase in this trade proportionate to the growth of the country, has much to do with present conditions in lake freights. He points to competition from Argentine, Russia and other grain producing countries for the grain trade of England and other consuming countries and refers also to the efforts which Galveston and other southern coast harbors are making to secure a part of the western grain business. "The United States government," he says, "at the expense of millions of dollars deepened those southern harbors from 12 to 24 feet, enabling ocean carriers to enter them and load grain. This grain is hauled from Kansas, Nebraska, and other antiguous states to Galveston for 10 cents per 100 pounds, thence it finds its way to the European market. All this is grain that was once shipped by way of Chicago to Buffalo, thence into the Erie canal and the railroads to New York and from there to Europe. Of course, we understand that this haul from the west to Galveston at the rate I have named is ruinous. They are losing money right along in doing it, but what they want is to deprive the lakes of the traffic so that in time they will come to have a certain thing of it. Thus has Uncle Sam spent millions to help along one section of the country at the expense of another. But then, ore is, after all the backbone of the lake commerce, and when the country shall have arisen from its present apathetic commercial state, then will the demand for iron see new life and the rush of tonnage into the ore trade have the tendency to stiffen prices for coal, grain and everything else, just as it did at the close of last season."

It is stated that Gen. Joseph P. Torris of Chicago, who recently purchased Mark Hopkins' yacht *Bonita*, is also considering the purchase of one or two other yachts for Chicago parties.

G. A. R. Encampment, St. Paul—The Nickel Plate road sells excursion tickets Aug. 30, 31, and Sept. 1. Through Chicago sleeping cars and diners on through trains. 253 Sep 2.



### English Comment on American Shipping.

Engineering of London, in an editorial on the Blue Book of American Shipping, published by the MARINE REVIEW, gives the percentage of the American tonnage in the trans-Atlantic trade. It also compliments the Blue Book to the extent of saying that it serves the same purpose as Lloyd's Registry of Shipping. Following is the editorial:

"Although only 23.18 per cent. of the tonnage entering United States ports from foreign ports last year were owned in the states, and but 22.81 per cent. of the tonnage cleared home owned, there is no question of the progress of American shipping, especially in interstate and lake commerce, and this progress well merited the handsome Blue-Book, which has just been issued from the offices of the MARINE REVIEW. But before referring to the extent of shipping owned in the United States, as indicated in the book, it may be interesting to indicate the extent of the participation of foreign shipping in United States commerce, as a measure of the full possibilities of American shipping, a point omitted from this publication. We have given the proportion of United States tonnage to the total entering and clearing in the foreign trade; in the past five years these have been slightly decreasing percentages, for in 1891 they were 24.06 and 24.4 per cent., respectively. The British proportion, on the other hand, has increased; the ratios of British arrivals to the total having gone up from 53.28 per cent. to 55.01 per cent., and of departures from 53.26 per cent. to 54.75 per cent. Germany has not made the same forward movement, its ratio in both respects being 8½ per cent.; that of France is only about 1.8, while Norway's is 4.35. Another indication of Britain's preponderance is found in the fact that while the vessels arriving from Britain measured 4.8 million tons, the British ships entering ports were 10½ million tons. The arrivals from Germany were 1,447,650 tons, while the German ships were 1,652,028 tons; and France also shows that she carries a small part of the United States foreign trade other than French.

"It is in the development of steam tonnage that one finds the greatest forward movement in the states. The total tonnage owned in that country is put at nearly 4½ millions, of which one-half is steam, whereas ten years ago the total was only 4 millions, of which two-thirds was sail, a large number mere barges. The vessels building, however, show a remarkable development, particularly in the lake district, the vessels under construction exceeding the total for the whole of the states in some recent years. Lloyd's, indeed, show that the number of lake steamers registered with them is 1,493 vessels, valued at 12 millions sterling, but vessels now building bring this total up to 1,554 vessels, valued at 13 millions sterling. This number probably includes 80 per cent. of the freight and passenger carriers on the lakes. Canada's portion, of course, is not included. The average of losses on the lakes is about fifty ships per year.

"For five years past lake vessels have carried during the navigation season an average of 56.2 per cent. of all freight moved eastward from Chicago, and as to relative rates and distances, much information is given in the Blue-Book of American Shipping, as well as most serviceable data as to the waterways, the depth of water, sizes and falls of canals, etc., with the regulations applying to each. The book, indeed, serves the same purposes as Lloyd's Registry of Shipping, the directory of learned societies, and a shipping and maritime manual rolled into one, with a profusion of beautiful process blocks representing every type of steamer built and owned in the States. Short historical notices are also given of the leading companies and of the technical associations, with portraits of the officials and prominent men."

Progress of improvement in the Portage Lake canals since the government acquired ownership of them has been very rapid. These canals will now admit of the passage of any vessel navigating the St. Mary's river, and further improvements under contract will give clear 16 feet at low water, with a minimum width of 75 feet from Keweenaw bay to the upper canal on Lake Superior. Several sharp turns in Portage river will be cut off.

Low rate excursion tickets are on sale via the Nickel Plate road to Toronto, Canada, Aug. 31 to Sept. 3, account of International Fair.  
255 Sep 2.

Toronto Fair, Sept. 1 to 12—The Nickel Plate road will place excursion tickets on sale Aug. 31.  
256 Sep 2.

### Ship Yard Matters.

The ability of the American Steel Barge Co. to do rapid work at its West Superior ship yard is shown in the fact that this company will be the first of the ship building concerns to complete its part of the big contract for ships let last fall by Mr. John D. Rockefeller. The barge company had, of course, only one steamer and a consort to build, and they were not hampered by any great amount of repair work, but it is certainly creditable to them that they have finished the two vessels so close to the time of agreement. The first of the vessels, the steamer John Ericsson, has already delivered at Cleveland a cargo of 4,017 gross tons, full weight, on 14 feet 6 inches draft, and her consort the Alexander Holley, which was launched a few days ago, is now in service. Her first cargo will probably be a little in excess of that of the steamer. Both of these vessels were illustrated and fully described in the REVIEW of July 16.

Manager Wheeler of the Cleveland Steel Canal Boat Co. is considering the question of using gas engines in the line of canal boats that have proven so successful in the Cleveland-New York trade. The matter is as yet in a preliminary stage, but if the new motive power is adopted the company's vessels will be operated in tows of two, a propeller and one consort. On this system it would be necessary, of course, to convert some of the tow barges into propellers. The proposed change also has a tendency to delay plans of the company with reference to the building of new vessels.

A Buffalo paper announces that if present plans carry the Union Steamboat Co. will rebuild the New York and Rochester next winter. There is no statement to that effect, but it is quite possible that they will be lengthened if the thing can be done in good shape. It is also the intention of the company to lengthen the Ramapo to 400 feet when harbor conditions warrant it.

The statement that the Standard Oil Co. will send to the coast the two barges which they have been using in the bulk oil trade on the lakes is probably correct. It has been known for some time past that it was the intention of the Standard company to build for the lakes barges of more than double the size of those now in use here.

Tonnage of the new Davidson steamer Appomattox (wood) is 2,643.67 gross and 2,082.17 net, while that of the whaleback barge Alexander Holley, just completed at West Superior for the Bessemer Steamship Co., is 2,721.34 gross and 2,553.99 net.

Notwithstanding the labor difficulties at the ship yard of F. W. Wheeler & Co., West Bay City, it is expected that the first of the three boats building for the Bessemer Steamship Co., a barge, will be launched during the fore part of the coming week.

At Heath's ship yard, Benton Harbor, Mich., a small wooden steam yacht will be built for H. B. Larson of Manistee, Mich. The Superior, a wooden tug 80 feet long, has just been launched at this yard. She is for the Singer Towing Co. of Duluth.

Another of the Minnesota Steamship Co's new steel tow barges, the Magna, will be ready for service within a few days. She was launched on Saturday last and is of the 4,000-ton type.

### In General.

David L. Bradley, editor of the American Shipbuilder, New York, has just issued a revised edition of the book known as "Bradley's Reminiscences of New York Harbor and Water Front Directory of New York, Brooklyn and Jersey City." In addition to a brief history of New York harbor and its commercial affairs, this book contains diagrams of entrances and of every foot of water front in New York, Brooklyn and Jersey City. Accompanying the diagrams is a complete directory of everything along the water fronts, including not only transportation lines but the location of every business firm, etc.

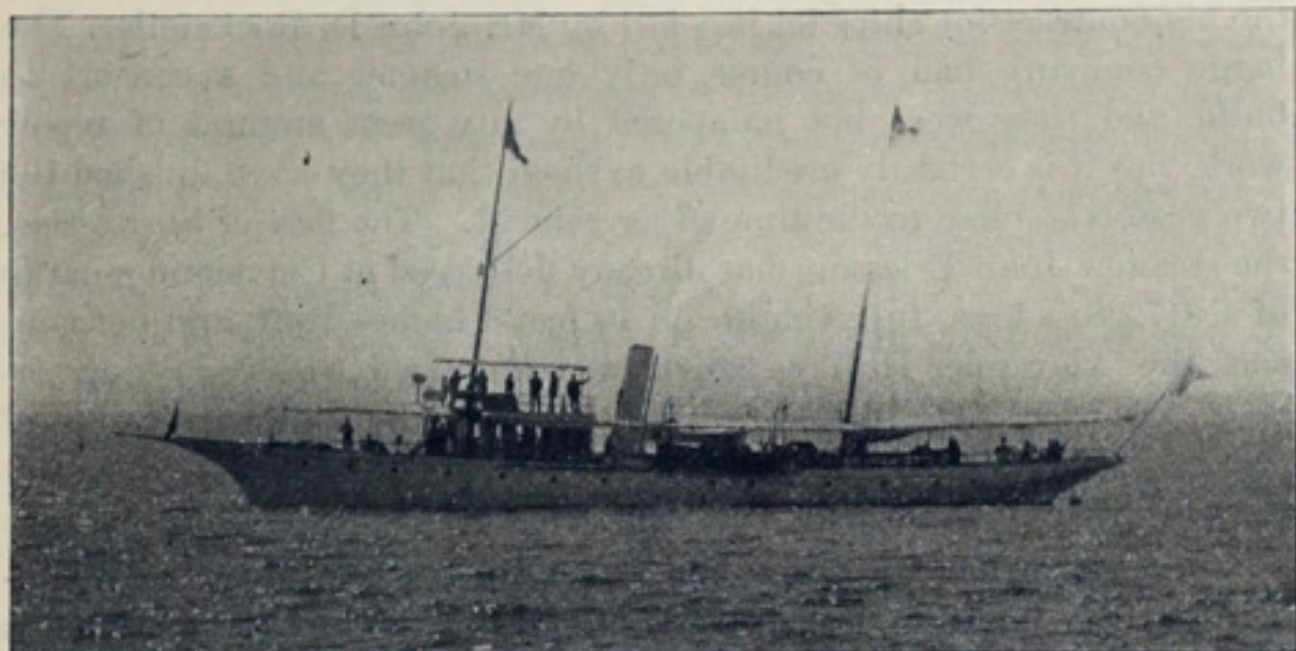
It is understood that as a result of low freights this summer, and the unusual demand upon owners to carry passengers on freight boats, the Lehigh Valley company has made a low fixed charge for passengers, to cover extra expense of provisions and help in the steward's department, with the understanding, of course, that no passengers are to be carried excepting such as have been shown this courtesy in the past without charge.

The ferry boat Camden, launched at Elizabethport, N. J., a few days ago, is the first vessel of her class to use water tube boilers.



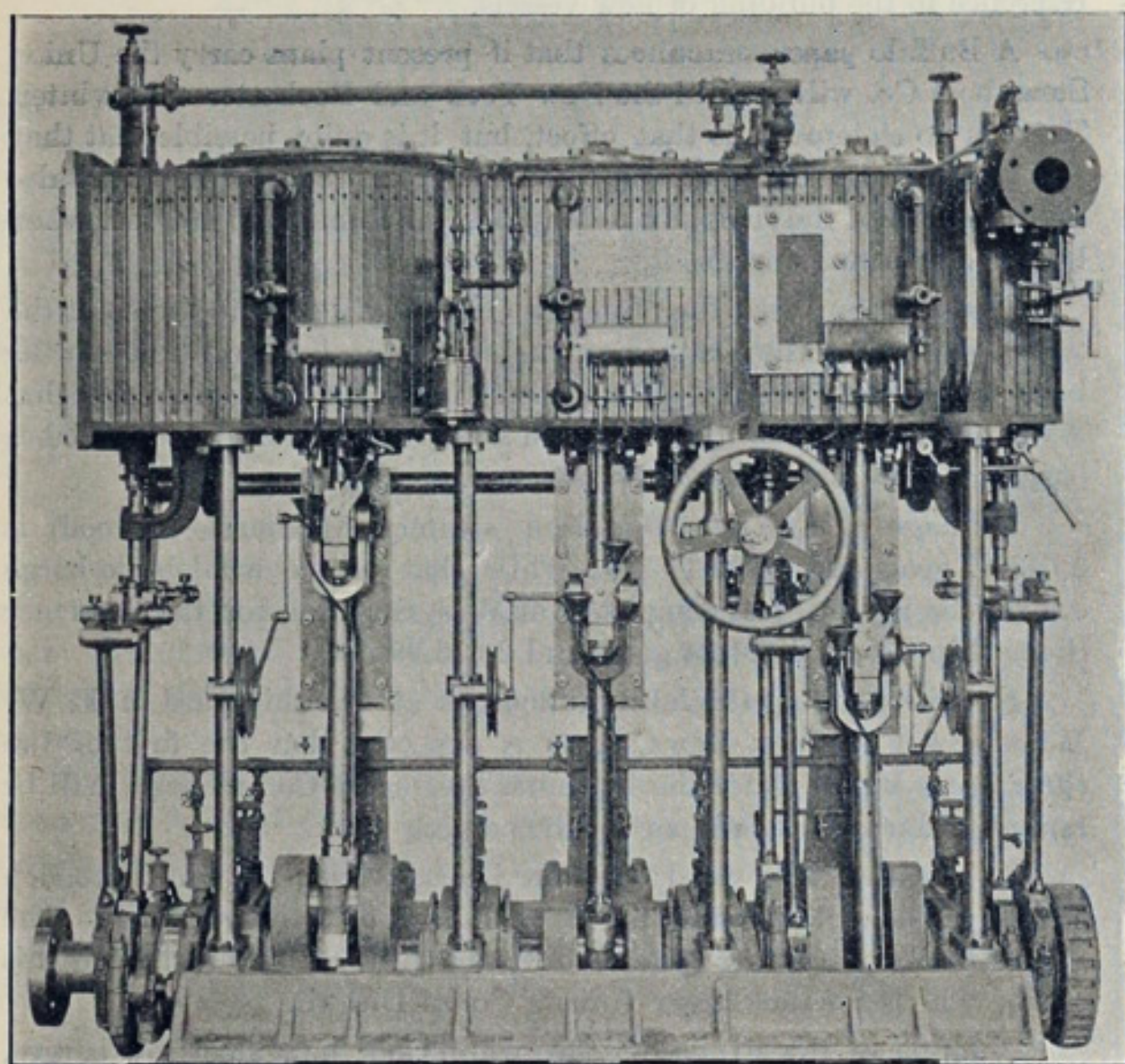
### Great Interest in a Steam Yacht Race.

A race between steam yachts of the very best class, with all details carefully planned and with owners of both boats aboard, agreeing



BUFFALO YACHT ENQUIRER.

that the affair would be entirely on merit, is certainly a rare occurrence. Such was the treat afforded on Thursday last to Cleveland people, and to a large number of visitors in the city, who attended a regatta, which was a part of the city's Centennial celebration. The



TRIPLE EXPANSION ENGINES AND WATER TUBE BOILERS OF YACHT ENQUIRER.

yachts were the Enquirer and Say When, the former owned by W. J. Connors, proprietor of the Buffalo Enquirer, an evening newspaper, and the latter owned by Hon. W. J. White of Cleveland, ex-member of congress and widely known as a man who has made a fortune in the manufacture of chewing gum. Both of the yacht owners are interested in vessel property on the lakes and have been associated in various ways, for some time past, with the development of lake commerce. The race was on a straightaway course of about 28 miles from Fairport harbor to a point opposite the club house of the Cleveland Yacht Club on the lake front in Cleveland. The remarkable feature of the event was the narrow margin by which the Enquirer won the race. She finished only 28 seconds ahead of the Say When, making the run in 1 hour, 34 minutes and 13 seconds. There was no quibbling over the result, and it was agreed that the contest was entirely fair.

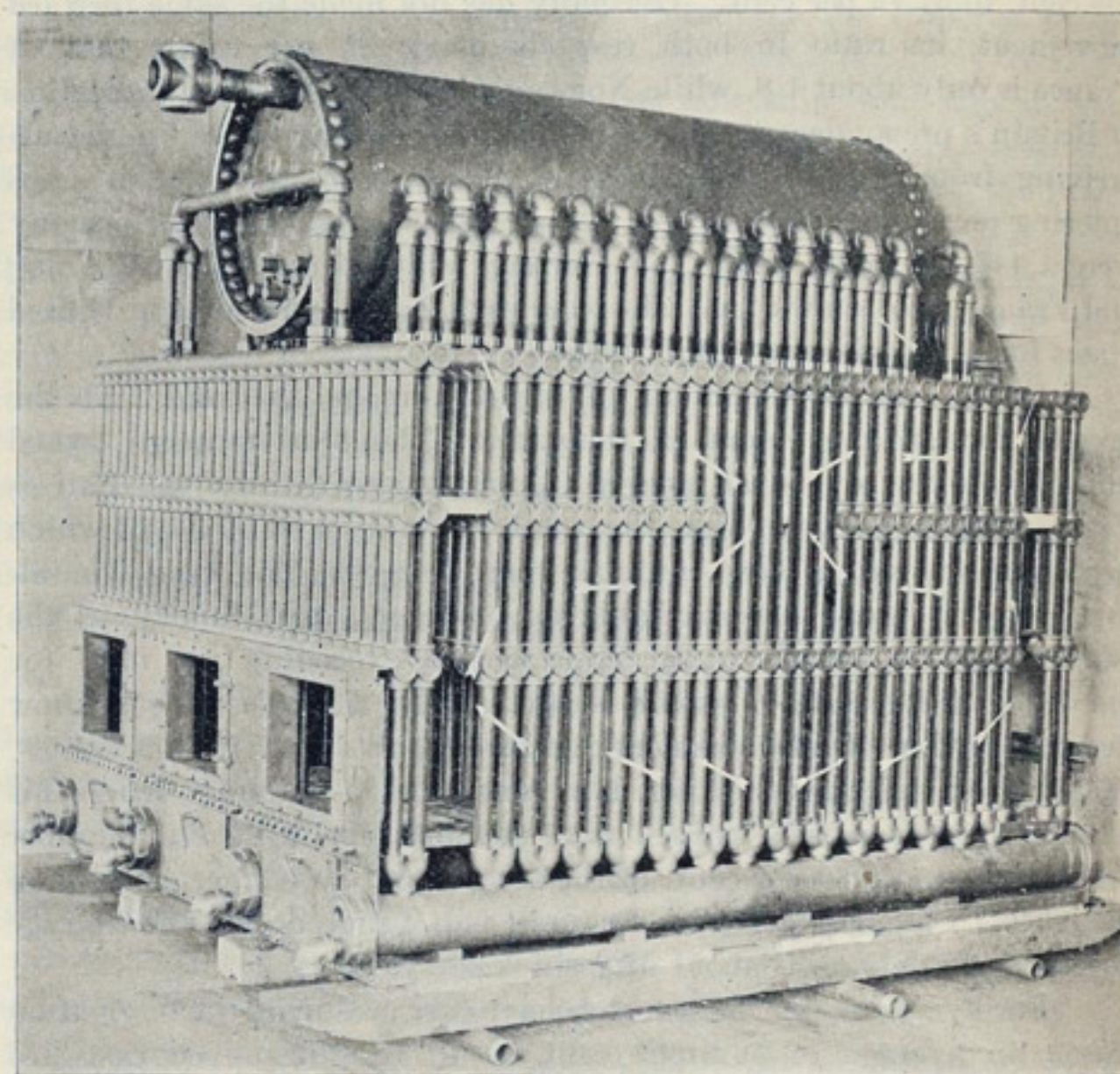
The speed, which was within a fraction of 18 miles an hour, was probably not up to the expectations of a great many people who talk of 20-mile boats on the lakes, but the result goes to show the great power necessary to develop 20 miles speed, a point upon which naval architects and engineers are repeatedly called upon to make explanations in refuting claims of high speed that are not backed up by reliable figures as to time and distance actually covered.

This race is an unusual victory for everybody interested in the

building of the Enquirer. Among the "talent," to use a horse-racing term, it was expected that the Say When, built by the famous Herreshoffs, and engined like one of the government's torpedo boats, would be the winner. But the Union Dry Dock Co. of Buffalo, a concern that makes no great pretensions in the matter of building fast vessels of any kind, has, with the assistance of S. F. Hodge & Co., engine builders of Detroit, and the builders of the Taylor water tube boiler, turned out in the Enquirer a yacht that will rank in the first class of high-speed vessels on the lakes.

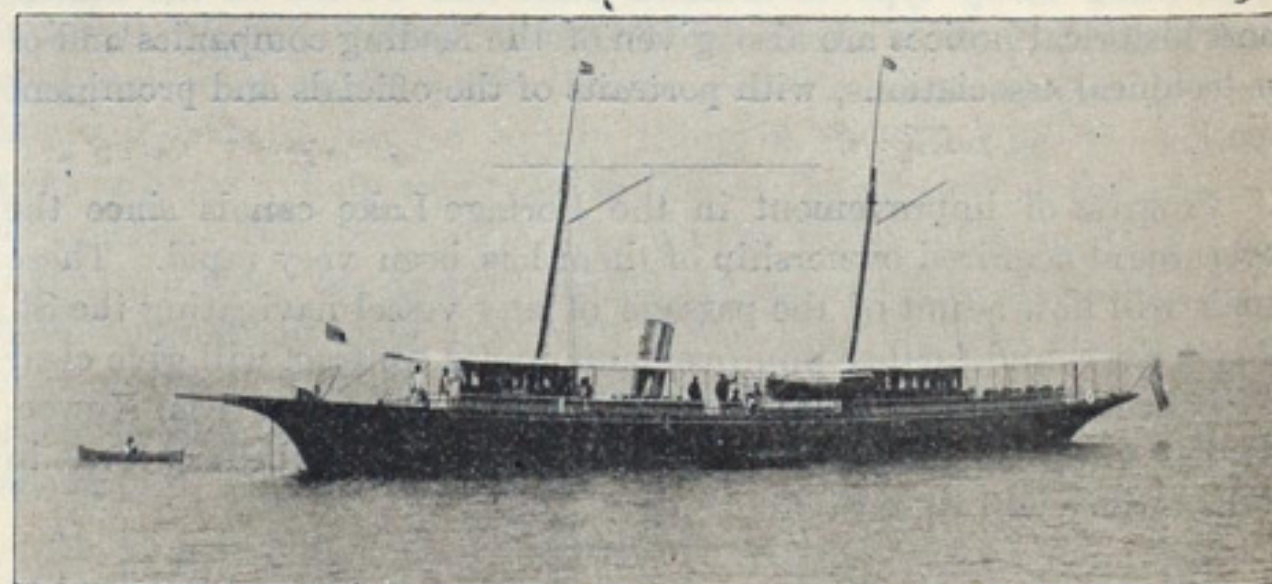
The Enquirer is 146 feet over all, 126 feet on the water line, 17½ feet beam, 10 feet deep and 7 feet draft. She was built by the Union Dry Dock Co. of Buffalo, but that company having no engine or boiler works, the contracts for these were sub-let. The engines, which are of the triple expansion type, were built by S. F. Hodge & Co. of Detroit. Cylinders are 10½, 17 and 27 inches diameter and 16 inches stroke. Her boiler is of the Taylor patent upright water tube type, manufactured by the Detroit Screw Works, Detroit, Mich. It is 8 feet 8 inches square on the floor and is 8 feet 5 inches high; has 51 square feet of grate surface and 2,281 square feet of heating surface. The boiler is said to weigh only 10 pounds per square foot of heating surface, and it is quite generally agreed that the result of this race will tend to direct attention to it as a steam generator suited to high speed.

The Say When, which is a wooden vessel, is of a model of the



CLEVELAND YACHT SAY WHEN.

racing kind, more so than the Enquirer, and her engines were intended to more than double the horse power of the Enquirer. She was built by the Herreshoffs of Bristol, R. I., for Norman Munro, who was known among leading eastern yachtsmen, and was purchased from that gentleman some five years ago by Mr. White. Her length



over all is 138 feet, length on water line 116 feet, beam 14½ feet, and draft 6 feet. She has a five-cylinder quadruple expansion engine, the cylinder sizes being 14½, 17½, 23½, and (two) 23½ by 15½ inches stroke. She has a Roberts water tube boiler, 9 feet 9 inches by 7 feet 4 inches.



### Lake Freight Matters.

Although government reports during the past week regarding exports of wheat and flour show quite an important increase in the shipment of these commodities from the Atlantic seaboard, which might be expected to have some effect on the lake movement, it must be admitted that the condition of the iron industry is against any hope of material improvement in lake freights for some time to come. In all the offices of the iron ore companies there is but one opinion, which is to the effect that the present depression will continue, with more or less force according to the immediate demands of the iron industry, until the money question is settled in November. If this opinion is correct, it would seem that there is little upon which to base expectations of improvement during the closing months of the season. The ore shippers are acting on their views of the future, as several of them have notified vessel owners with whom they have season contracts that they expect to be compelled, later on, to cancel for the present season a portion of these contracts, with the understanding that the ore is to be carried next season. In other cases shippers are already paying on ore contracts only enough money to cover the expense of operating vessels, and are giving notes for monthly balances. This arrangement is not looked upon unfavorably by vessel owners, as interest will, of course, be paid on the balances, which amount practically to a loan of money from vessel owner to shipper. More vessels are being laid up and it is quite probable that within the coming week the number in ordinary will be quite largely increased. Of the Bradley fleet there are now sixteen out of commission, while Mr. J. C. Gilchrist has seven laid up.

### Discussion of the Steam Yacht Race.

Editor MARINE REVIEW:—The outcome of the steam yacht race between the Say When and the Enquirer has a special interest attached to it, inasmuch as it really is a great victory for Mr. H. H. Taylor and his new boiler. Giving the builders of hull and engines of the Enquirer just credit, it still needs an explanation to understand how she could beat a racing machine like the Say When, considering and comparing dimensions and machinery. Here are the leading particulars:

	SAY WHEN.	ENQUIRER.
Length over all.....	138 feet.	145 feet.
Length on water line.....	116 feet.	126 feet.
Beam on deck.....	14½ feet.	17½ feet.
Beam on water line.....	13 feet.	16½ feet.
Draft.....	6 feet.	7 feet.
Type of engine.....	Five cylinders, quadruple	Three cylinders, triple.
Bore of cylinders.....	11¼-in., 17½ in., 23¼ in., 23½ in. and 23½ in.	10¼-in., 17-in. and 27-in.
Stroke.....	15½ inches.	16 inches.
Revolutions.....	350	325
Diameter of propeller.....	50 inches.	60 inches.
Type of boiler.....	Roberts.	Taylor.
Floor space.....	9 ft. 9 in. x 7 ft. 4 in.	8 ft. 7 in. x 8 ft. 7 in.
Weight in tons.....	14	11
Heating surface, square feet.....	1,400	2,200
Grate surface, square feet.....	48½	51
Steam pressure.....	250	250
Heating surface to grate surface.....	28.8	43.14

From the above it will be seen that the Say When must be the better model for speed, as it has nine beams in length against the Enquirer's eight beams to length. The Say When is built of wood, as are most of Herreshoff's racing machines, and is extremely light, having an estimated displacement of 70 tons, while the displacement of the Enquirer, which is built of steel, is about 100 tons. The Say When's engines are duplicates of those in the torpedo boat Cushing, and are designed for at least 1,200 H. P., while those of the Enquirer with 36 pounds M. E. P. only figure up to 550 H. P. But in my opinion the Say When lacked boiler power. With her large engines she had only 1,400 square feet of heating surface to work with, while the small engines had 2,200 square feet. This race will tend to direct attention to the Taylor boiler among yachtsmen and builders. It is as yet not very well known, as it has been used in only two yachts other than the Say When, and these were both built by the Detroit Boat Works.

In regard to the actual speed made by the yachts, I have carefully measured the distance from Fairport to the club house of the Cleveland Yacht Club and find it to be twenty-eight miles. As this distance was run in one hour 34.15 minutes, the actual speed was 17.85 miles per hour, which is good speed for the Buffalo yacht but a poor showing for the Say When. I trust that the spirit of steam yacht racing has by this race been given an impetus that will not die out. There are so many claims made of yachts capable of making 20 or

more miles an hour that it is hard work to convince people to the contrary, and as a yacht builder I am naturally interested in having the actual speed known. It may greatly facilitate future contracts.

Detroit, Mich., Aug. 18, 1896.

FRED. A. BALLIN.

### Points for Deep Draft Freight Ships.

Not long ago, when vessels were at a big loss in cargo capacity, on account of low water in connecting channels of the lakes, there were many vessel owners declaring that "we will never have the 20-foot channel talked of by the engineers." This assertion was heard repeatedly during the period of lowest water last season when Senator Brice started a movement favorable to a dam at Niagara, or a system of dams for raising the levels of the lakes. There is certainly a great deal of reliable engineering opinion in favor of a dam at Niagara, and such a scheme for increased draft of water in the connecting channels of the lakes might prove far less costly than the government plan of dredging that is being carried out by the army engineer corps, but however this may be it is certain that the tendency this season towards a return to the normal condition of water levels proves quite conclusively that there is no doubt of a draft of 20 feet of water being secured, in the connecting rivers of the lakes when the big dredging jobs now nearing completion are finally at an end.

Within the past few days we have witnessed the passage of two big steel steamers from Chicago to Buffalo drawing full 17 feet and several of them drawing nearly 17 feet. In fact the whole stretch of channels from Lake Michigan to Lake Erie, with the exception of a small section of the Detroit river between Wyandotte and the foot of Bois Blanc island, now affords 20 feet navigation, and the same will be true of all channels leading to Lake Superior shortly after the opening of navigation next season. The shallow section of the Detroit river referred to is being dredged as rapidly as possible. It now offers no obstruction at normal stage to vessels drawing 17 feet of water, but there are a few spots on which the dredges are at work that must be avoided by vessel masters. It is well known, of course, that vessels are now using one half of the new channel at Ballard's reef. Near the second black stake below Ballard's reef light-ship is a rock shoal extending about 100 feet east of the line of black stakes and about 100 feet up and down stream. The available depth of water over this shoal is only 17 feet although there is 17½ feet or more in the other parts of the channel. Vessels will do well, therefore, to keep to the middle of the west half of the channel in passing this buoy. Another spot in this vicinity that requires attention from masters of deep draft vessels is at the foot of the Lime-Kiln crossing. There is a rock shoal a short distance below the intersection of the Lime-Kiln crossing and Bois Blanc island ranges and about 50 feet east of the Bois Blanc island range. The available depth of water on this spot is 17.3 feet. Still another spot is near the red spar buoy on New York shoal, below Mullen's coal dock. There are ridges of sand and clay with boulders imbedded, but over these boulders there is an available depth of 17.5 feet.

The people of the lakes are scarcely given an opportunity to become acquainted with employes of the Northern Steamship Co. before their resignations are announced. It is a strange policy, to say the least, that causes so many changes in this line. Mr. A. A. Heard, whom it is said will leave the company on Sept. 1, has just about had time to make friends during his period of employment with the Northern people as general passenger agent, and he has made a great many of them who wish him success in anything new that he may undertake.

It is quite evident that if there was only half the demand for ore now that existed a year ago this time, the condition of lake freights, under the present movement of grain, would be such as to allow a liberal profit to vessels. During one day of the present week (twenty-four hours) there was received at Buffalo 1,294,773 bushels of grain, and during three days ending Wednesday night the receipts aggregated 3,090,170 bushels.

On Aug. 6, 1896, the steamer Shenango No. 2, off Erie harbor entrance, struck a shoal with less than 11 feet of water over it and 30 feet of water in close proximity on all sides. The shoal lies about 1½ miles from the outer end of the north pier, exactly on range of Presque Isle beacon and Erie range beacon No. 1.

Subscribers will avoid danger of mistakes by giving the old as well as the new address when a change is desired.





DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 409 Perry-Payne building, Cleveland, Ohio,  
by John M. Mulrooney and F. M. Barton.

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient  
binders sent, post paid, \$1.00. Advertising rates on application.

Entered at Cleveland Post Office as Second class Mail Matter.

The books of the United States treasury department on June 30, 1895, contained the names of the 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1895, was 360 and their aggregate gross tonnage 643,260.40; the number of vessels of this class owned in all other parts of the country on the same date was 309 and their tonnage 652,598.72, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

	Number.	Gross Tonnage.
Steam vessels.....	1,755	857,735.13
Sailing vessels.....	1,100	300,642.10
Unrigged.....	487	83,081.91
Total.....	3,342	1,241,459.14

The gross registered tonnage of the vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30, 1891.....	204	111,856.45
" " " 1892.....	160	45,968.98
" " " 1893.....	175	99,271.24
" " " 1894.....	106	41,984.61
" " " 1895.....	93	36,352.70
Total.....	347	335,433.98

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1895*	1894	1893	1895	1894	1893
No. vessel passages.....	17,956	14,491	11,008	3,434	3,352	3,341
Tonnage, net registered.....	16,806,781	13,110,366	9,849,754	8,448,383	8,039,175	7,659,068
Days of navigation.....	231	234	219	365	365	365

\* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about ¼ per cent. of the whole, but largely in American vessels.

WHEN it was suggested during the life of the late Gen. Poe that a monument or memorial of some kind be erected in his honor at Sault Ste. Marie he discouraged the idea. He said that the successful completion of the big canal lock would be all that he desired. The lock, now practically completed, stands as a great work to his memory. A tablet or some sort of a memorial to Gen. Poe may be erected later on, but whatever is done in this regard let it be understood that the big lock shall for all time be referred to not as the new lock or the 800-foot lock, but the Poe lock. The newspapers of the lakes can do a great deal toward bringing about the general adoption of this name. Gen. Poe was always courteous and obliging in his dealings with the newspapers and they can perpetuate his memory in this way. He was a great friend of the vessel interests, and captains, owners, and in fact everybody connected with lake shipping will be paying a tribute to his memory every time they refer to this lock as the Poe lock in their dispatches, letters, etc. It was a happy thought that caused Col. Lydecker, Gen. Poe's successor, to name this lock the Poe lock, and to also honor the memory of another distinguished engineer by calling the old lock the Weitzel lock.

VESSEL owners are justified in complaining about the continuance of high charges for unloading ore under the present condition of lake freights. The dock companies should not hold out against a reduction on a claim that it would disturb labor. Vessel owners have gone on carrying ore at the lowest range of freights ever recorded without reducing wages, and from what is known of the earnings of dock companies it is quite certain that they could reduce the unloading charges on ore, to meet present conditions, without cutting the labor scale on the docks, if this is what they seek to avoid. On account of the close relations between ore shipping firms and dock companies, the vessel owner has no means at his command to enforce a reduction in dock charges, although it must be admitted on all hands that the freight situation warrants a reduction. It is to be hoped that simple justice will prompt the dock companies to take action in this matter.

It is probably not generally known that the Lake Superior water, on account of its purity and clearness, is often used as distilled water in the chemical laboratories of Michigan. A white object one square foot in area has been seen at a depth 40 feet below the surface of Lake Superior. By evaporation of 1,000,000 parts of water taken at Grand Marais, Mich., a solid residue of only 46 parts (by weight) was found.

Lake Michigan water contains in 1,000,000 parts about 150 parts solids. The great bulk of the solids found in both waters are what are known chemically as calcium carbonate and magnesium carbonate.

HOWEVER discouraging the present business conditions may seem to men of the iron industry and the industries that are dependent upon that great branch of trade, there is some consolation in the feeling that when a change for the better is inaugurated it is certain to be of a marked kind. A suspension of production in the iron business is causing a clearing up of stocks in all directions. The production of pig iron of all kinds throughout the country has been reduced to less than 150,000 tons a week, as against 217,000 tons a week in November last.

It is said by people close to Mr. John D. Rockefeller that one great thought which he has in mind at present is to provide, through his varied interests, constant employment for 20,000 men.

### Big German Ships.

The three Atlantic liners which are being built in Germany for the North German Lloyd Co. will undoubtedly be very fast ships, as the builders are resorting to the highest engineering practice. One of these steamers, building at the Vulcan works, Stettin, was described in a recent issue of the REVIEW and now we find reference in foreign exchanges to another of them, building by Mr. F. Chichau, at the Danzig yard. This steamer will have twin-screw engines of the five-cylinder, quadruple expansion type, the cylinders being arranged as follows: The high pressure and the first low pressure cylinders, and the first intermediate and second low pressure cylinders, are tandem fashion over the forward and middle cranks, respectively; the second intermediate cylinder works the after crank alone. Piston valves will be fitted on the high pressure and the first intermediate cylinders only, the others having slide valves. Link gear will be used. The cylinder diameters are to be 36.09, 53.48, 76.77, and (2) 77.76 inches, the stroke being 55.78 inches. The cooling surface of condensers will be about 40,900 square feet. An independent circulating pump in each engine room will be large enough to supply both condensers, in case of emergency. The main air pump, two feed, two bilge and two flushing pumps will be worked from each main engine. There will be, besides, in each engine room, one duplex feed pump, large enough to feed all boilers; one auxiliary feed pump; one fire pump, and one duplex feed pump with feed heater. The crank and propeller shafts will be of nickel steel, with an outside diameter of 19.68 inches, and has 7.284-inch hole. The line shafting will be of Siemens-Martin steel, 18.86 inches in diameter. The propeller shafts will be fitted with a bronze casing, 9.84 inches thick, the outboard parts of which will be coated with a patent gum preparation. The propellers will be of bronze, each 20.34 feet in diameter, and have a pitch of 32.81 feet.

There will be nine double-ended and one single ended boiler, arranged in three compartments, and three smoke-pipes. The diameter of boilers will be 16.73 feet, and the thickness of shell plates 1.246 inches. The total grate surface will be 1,442 and the heating surface 76,430 square feet. The working pressure will be 220 pounds per square inch.

No river on the globe can furnish 800 miles of scenery as delightful as that spread on the banks and islands of the St. Lawrence. It is surprising that the summer travel on this river is so largely made up of eastern people and foreigners, with such a small representation from lake cities and western states. A week in the Thousand islands and the shooting of the boisterous St. Lawrence rapids, in going thence to Montreal, would make an enjoyable summer vacation in itself, but it is only one night's travel from there to Quebec, which equals in historical interest and quaintness many cities of the old world. It is only a day and a night from Quebec to the headwaters of the river of death—the Saguenay. In going up this river the steamer rounds to under a rock 1,500 feet high, said to be as impressive as any single view in the old world. The steamers of one navigation company traverse the entire distance from Toronto to Chicoutimi, 800 miles via Montreal and Quebec—the Richelieu & Ontario Navigation Co., 228 St. Paul street, Montreal.

Special train excursion to Niagara Falls via the popular Nickel Plate road, Saturday, August 8. Train leaves Broadway depot at 10 p. m. \$3.50 for the round trip. Tickets good returning until August 10.

221-Aug. 8.



**Cargo and Speed Records—Lake Freight Ships.**

Iron ore—Coralia, Mutual Transportation Co. of Cleveland, 4,813 gross or 5,391 net tons, Escanaba to Ashtabula, draft of 16 feet 1½ inches; S. S. Curry, Hawgood & Avery Transit Co. of Cleveland, 4,569 tons gross or 5,117 net tons, Escanaba to South Chicago, draft of 18 feet. Lake Superior cargoes—Steamer Sir Henry Bessemer, Bessemer Steamship Co. of Cleveland, 4,117 gross or 4,611 net tons, Ashland to Conneaut, draft of 14 feet 6 inches.

Grain—Steamer Queen City, A. B. Wolvin of Duluth, 205,500 bushels of corn, Chicago to Buffalo, 16 feet 7 inches draft; steamer Maricopa, Minnesota Steamship Co., Cleveland, 191,700 bushels of corn, Chicago to Buffalo.

Coal—S. S. Curry, Hawgood & Avery Transit Co. of Cleveland, 4,535 net tons bituminous, Conneaut to Gladstone; Selwyn Eddy, Eddy Bros. of Bay City, Mich., 4,252 net tons anthracite, Buffalo to Milwaukee.

Speed—Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Centurion, Hopkins Steamship Co. of St. Clair, Mich., Buffalo to Duluth, 997 miles, 67 hours and 50 minutes, 14.7 miles an hour.

**Lights, Buoys, Signals, etc.**

Commander Dayton, light-house inspector on Lake Michigan, gives notice that a second-class can buoy, painted black, has been established on Waverly shoal, Porte-des-Morts passage. The buoy is in 20 feet of water and marks the north-east extremity of the small shoal (12 feet least depth) on which the steamer Waverly grounded in July, about 700 yards to the northward of Nine-foot shoal buoy. A spar buoy painted black has been substituted at the same moorings for the black second-class nun buoy formerly marking the southeast extremity of Nine-foot shoal, Porte-des-Morts passage.

Day and night wind signals will hereafter be displayed by the weather bureau from the coal docks of Stanley B. Smith & Co., on the Detroit river. The day signals will be displayed from a staff on the water tank in the center of the dock, and the night signals from the staff 25 feet above the chutes at the south end. The lights will be electric, the white light of thirty-two candle power and the red light of sixty-four candle power. Notices of all storm warnings will be posted in the office of the coal dock.

**Increased Speed and Reduced Cost of Fuel.**

Some letters received recently by the Detroit Dry Dock Co. are highly favorable to the Howden system of hot draft. Following is one relating the experience of the Sandusky owners of the steamer Arrow:

Mr. A. McVittie, Detroit Dry Dock Co., Detroit, Mich.—Dear Sir: At the time of making a contract with your company for the building of our steamer Arrow, it was our desire to place in the new hull the walking beam engine (Fletcher Co.'s pattern, 9 feet stroke by 40 inches bore), which had been in the Jay Cook and City of Sandusky. We also had on hand a marine fire box boiler, 9 feet shell by 16 feet length, and we contracted with you for feathering wheels, being anxious to have our engine turn these wheels at a speed of thirty-four to thirty-six revolutions per minute. We were convinced that the boiler could not furnish steam for this rapid turning. You urged us strongly to apply the Howden hot draft, claiming it would fill the deficiency. We accepted the suggestion. After one season's work, I am pleased to say to you that the steamer Arrow makes fully three to four miles an hour better time than was made by the steamer City of Sandusky on regular trips under full speed. We have no trouble in holding steam while making thirty-four to thirty-six turns per minute, and have made a saving of 20 per cent. in fuel. We have nothing but praise for the Howden system. E. McFALL, Manager,

Sandusky and Island Steamboat Co.

Sandusky, O., April 29, 1896.

In a large number of cases the Blue Book of American Shipping has been sent on approval to ship owners, ship builders, marine engineers and others interested in shipping. In every case the price of the book, which is \$5.00, has been remitted immediately.

Excursion to St. Paul via the Nickel Plate road Aug. 30, 31, and Sept. 1, account of the G. A. R. Encampment. Unexcelled diners and sleepers.

254 Sep 2.

**A Coast Passenger Steamer.**

A freight and passenger steamer of large dimensions for the Cromwell line, one of the oldest lines running out of New York, was launched at Newport News, Va., a few days ago. The steamer was named Creole. She will run between New York and New Orleans. The hull is entirely of steel, 375 feet over all, 44 feet moulded beam and 32 feet 6 inches moulded depth. Unlike other steamers in the Atlantic coasting trade, the Creole, which was designed by Horace See, naval architect of New York, has a water bottom in addition to transverse bulkheads that divide the hull into compartments. The hull is entirely of steel, with three continuous decks and a partial orlop deck forward and a promenade deck at top of main deck-house extending about 170 feet in length. There are accommodations for seventy-five first-class passengers and 150 steerage passengers. Engines are of the vertical triple expansion type, with cylinders 28, 44, and 74 inches diameter and 54 inches stroke. The valves are of the piston slide variety, worked by the See-Marshall valve gear, each valve receiving its motion from a separate eccentric. Steam is furnished by three cylindrical double-ended steel boilers, each having six corrugated furnaces with a common combustion chamber. The working steam pressure is 180 pounds. The circulating pump is centrifugal and driven by an independent engine. The vessel has a complete outfit of Blake pumps of the latest pattern, similar to those furnished by the Blake company on all the large United States naval cruisers and battleships. An electric light plant, Williamson steam steerer and Providence windlass and capstans are other features of her equipment.

**Stocks of Grain at Lake Ports.**

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes on Aug. 15, 1896:

	Wheat, bushels.	Corn, bushels.
Chicago.....	13,249,000	6,802,000
Duluth.....	5,641,000	25,000
Milwaukee.....	163,000	1,000
Detroit.....	294,000	17,000
Toledo.....	657,000	93,000
Buffalo.....	1,451,000	405,000
Total.....	21,455,000	7,343,000

As compared with a week ago, the above figures show at the several points named a decrease of 565,000 bushels of wheat, and an increase of 391,000 bushels of corn.

Letters bearing the following names await claimants at the marine post office, Detroit: Nils Anderson, Moses Breiyere, Jno. E. Brown, Jos. Brother, Eddie Connor, Belle Clark, S. M. Carter, Barnard Cummins, Herbert Crittenden, Geo. Connors, Edw. Elderkin, H. C. Eldridge, Eugene M. Emmons, E. A. Gerand, Thos. W. Graham, Theodore Gremmtea, F. P. Hoffman, Maurice Harmon, Jas. J. Hazel, Geo. Hauton, F. A. Huett, Edgar Hough, Capt. James Halloch, Jas. Halloch, Jas. Hooper, Leroy Kearns, Geo. Jedarnsky, Edwin Morris, Robert McGregor, Jno. Murphy, Mrs. Jno. A. Noble, Mr. A. Oggert, J. Pottor, Capt. Harvey Peters, Claude Peter, Jas. E. Priest, H. Rolfson, Wm. Rosie, Jas. Regan, Geo. Reye, Samuel Siddall, Ira Slaght, Henry J. Smith, Mr. Slaght, S. Smith, Merl Soper, Arthur Simmons, Alex. Sinlay, Ralph Vantoll, Edw. Vinton, Harry Woods, Alex. Wiedman, Jno. Young.

Two big foreign orders for hoisting and conveying machinery have been received recently by the Brown Hoisting & Conveying Machine Co. of Cleveland. One is for a blast furnace in connection with the famous Krupp works of Germany, and consists of three standard Brown overhead bridge tramways, to be operated by electricity, each machine having independent winding drums and electric motors. The Brown company furnish all the working parts, including the sheaves, engines, motors, hoisting and conveying machines, etc., in fact, everything but the bridges proper, which will be built in Germany. There will be three Elwell-Parker motors used of about 60 horse power each. The second order is for three of the Brown company's largest overhead bridge tramways for the handling of coal and ore, from the Krainische Industrie Gesellschaft, a large manufacturing concern of Austria.

The Nickel Plate Road sells excursion tickets to the G. A. R. Encampment at St. Paul, Aug. 30, 31, and Sept. 1. 252 Sep 2.



## Principal Poe Lock Contracts.

Among the important items involved in contracts connected with the building of the new Poe lock at Sault Ste. Marie were the following:

Lock masonry, Hughes Bros. & Bangs.....	\$1,085,470
Deepening canal prism, sections 1 and 2, Dunbar & Sullivan.....	435,800
Constructing approaches, J. B. Donnelly.....	160,000
Excavation, west end lock pit, Hughes Bros. & Bangs.....	10,421
Power House and office building, J. V. Gearing.....	117,527
Cofferdam lock pit, C. E. Mitchell, Carlin, Stickney & Cram, Hickler & Green.....	152,184
Excavation, lock pit, Collins & Farwell.....	197,717
Lock floor, Hughes Bros. & Bangs.....	247,472
Lock gates, Detroit Bridge & Iron Works.....	182,609
Anchorage for gates, Detroit Bridge & Iron Works.....	20,478
Valves for culverts, Variety Iron Works.....	26,863
Valves in forebay, Michigan Brass & Iron Works.....	2,390
Snubbing hooks in lock walls.....	1,598
Operating machinery, Variety Iron Works.....	59,400
Pumps, Southwark Machine & Foundry Co.....	24,935
Boilers, pumping plant, Babcock & Wilcox Co.....	47,574
Engines for pumping plant, Westinghouse, Church, Kerr & Co.....	16,375
Turbine plant, Hughes Bros. & Bangs.....	37,318
Excavation, pump well, Hughes Bros. & Bangs.....	9,760
Filling back of lock walls, Hughes Bros. & Bangs.....	36,572
Excavating within cofferdam and building cribs, S. Dumond.....	20,610

Stories of a sale of the fast river steamer Unique to agents of the Cuban revolutionists are probably not founded on negotiations of a very substantial nature. If the Unique was specially desirable for service in the Cuban war, the matter of a price satisfactory to her owners would not delay a settlement.

J. H. Sternbergh & Son of Reading, Pa., who are known to all ship builders as leading manufacturers of boiler, bridge and ship rivets, bolts, nuts, washers, etc., have just issued a neat catalogue which contains several tables of weights that will prove very handy to anyone using material of this kind.

## Nearly 6,000 tons—Big Cargoes.

Editor MARINE REVIEW:—I notice in your issue of the 13th inst. an item regarding large cargoes of grain recently loaded at South Chicago, and believing you have been misinformed and are desirous of getting correct information, I write to state that the steamer Queen City on August 6 loaded 205,500 bushels of corn, and her draft of water on leaving the elevator was 16 feet 3 inches forward and 16 feet 10½ inches aft, or an average of 16 feet 6¼ inches on an even keel and not 17½ feet as reported to you.

Chicago, August 6, 1896.

D. T. HELM.

Since the above communication was received the Queen City reached South Chicago on another trip and she loaded at that port on Tuesday 207,000 bushels of corn for Buffalo. Her draft under this big cargo is reported in newspaper dispatches as 16 feet 3 inches forward and 17 feet 1 inch aft, or an average of 16 feet 8 inches. This cargo of grain foots up 5,796 net tons and is, of course, the largest load of any kind ever moved by a lake vessel.

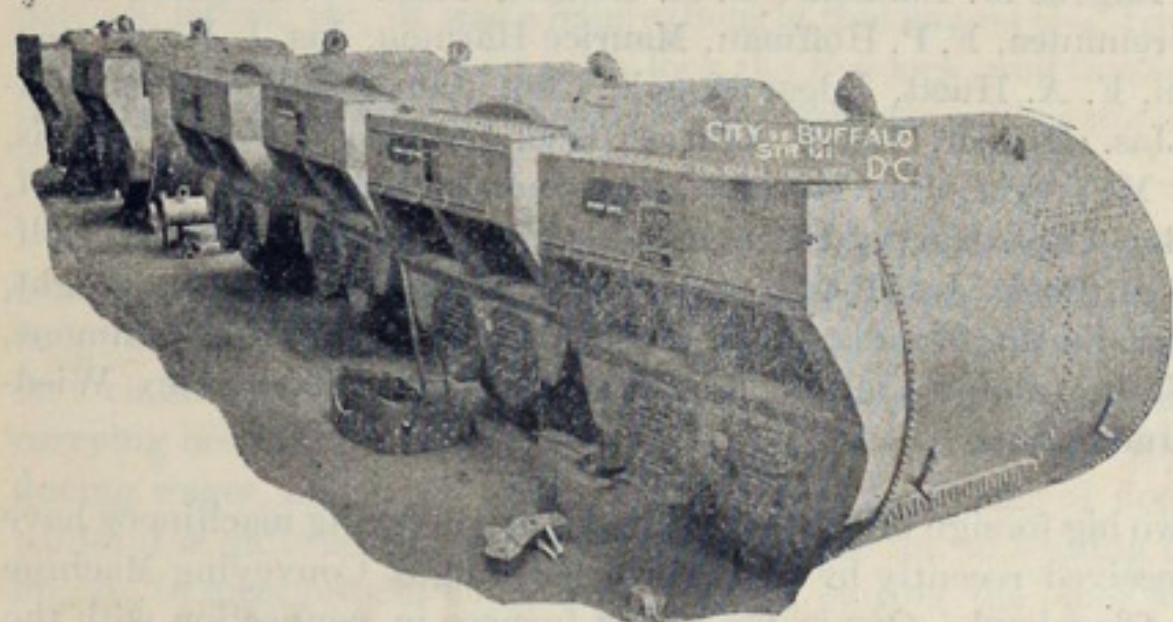
Col. Lydecker gives as the reason for the comparatively few lock-ages through the Poe lock that he had given instructions to Sudt. Wheeler that until all the machinery had worn away its stiffness and becomee asy running, and until the lock force had become thoroughly accustomed to the manipulation of the machinery, which is vastly larger than that of the old lock, it was to be "favored" against the other. The new lock is therefore for the present being used as a drill ground for the crew, and when the force shows the slightest signs of being rattled, or the machinery acts too stiffly, work on it is stopped for the time and the boats sent through the old lock.

Capt. Clint Ennis will leave Cleveland for Detroit in a few days to take out the Bessemer Steamship Co.'s steamer Fairbairn, a ship of greater length than anything now afloat on the lakes, while his son, Capt. C. M. Ennis, has just been appointed to command of a steamer, the M. C. Neff.

Since the last cruise of the New York yacht club, the Almy Water Tube Boiler Co. of Providence, R. I., has supplied boilers for seventeen yachts owned in and around New York.

## Air is Cheap—Cheaper than Dirt!

### FUEL IS DEAR—VERY DEAR! USE AIR AND SAVE FUEL!



Six Boilers with Howden Hot Draft appliances now in Side-Wheel Steamer City of Buffalo. Dimensions of each boiler—12 ft. 6 in. diameter by 12 ft. length.

**E**CONOMY in operating expenses on Lake Ships must come from reduced coal bills. No great saving can be made in labor cost, and provisions are already low. But fuel bills can be lowered and cheap coal used to advantage by adopting Modern Methods of making steam at low cost.

No manufacturer of pig iron would to-day think of running his furnace without a hot blast. Competition would not permit it. This same competition demands advanced practice in the operation of ships. The same principle is applied in the

## HOWDEN HOT DRAFT

Now in use on Lake Steamers aggregating over 40,000 Horse Power.

CAN BE APPLIED TO OLD SHIPS AS WELL AS NEW ONES.

No complicated machinery. Cool engine rooms and cool fire holds. Estimates readily furnished for application of this draft to any steamer.

## DRY DOCK ENGINE WORKS, DETROIT, MICH.



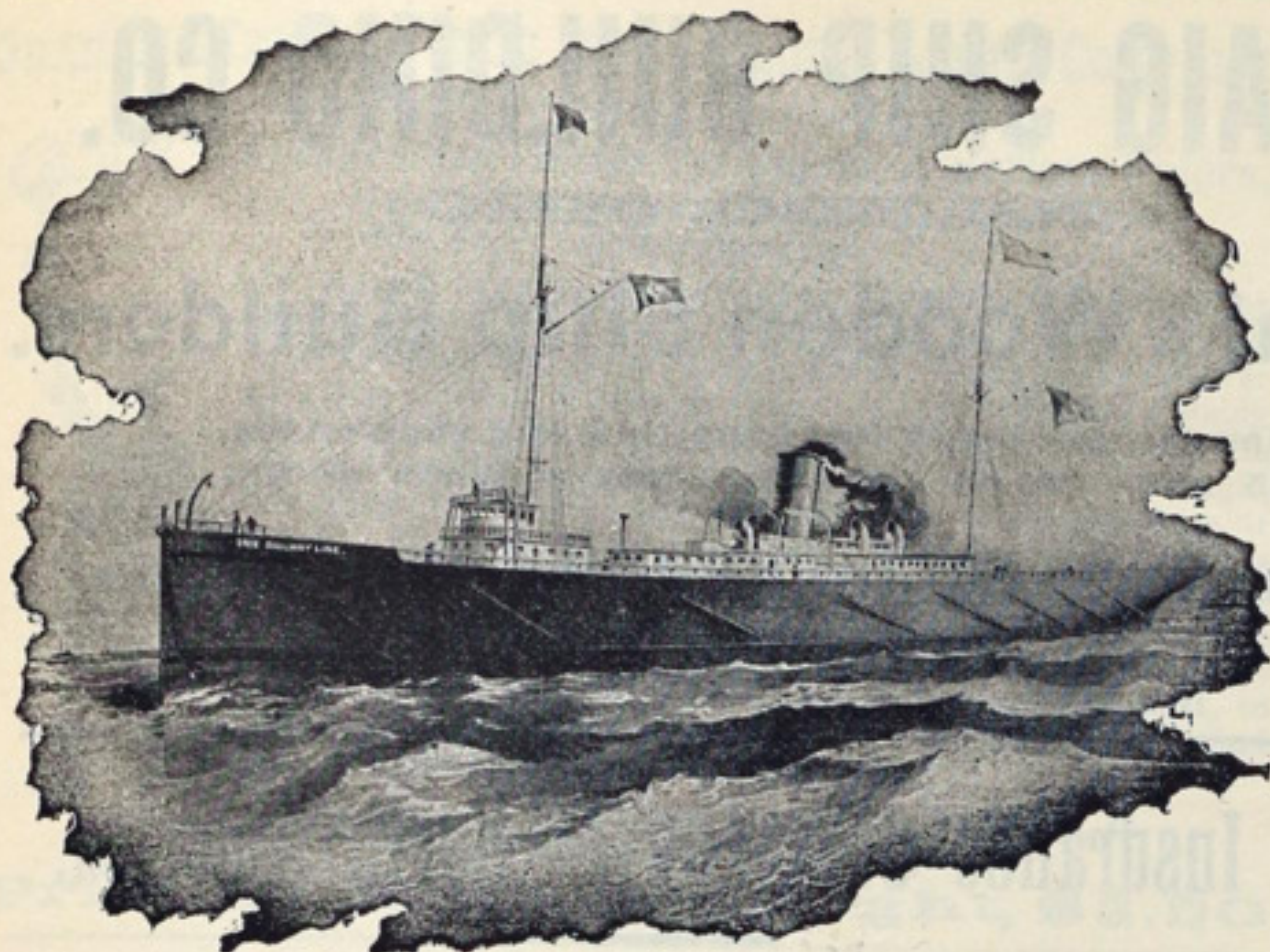
## Rapid Fueling Docks, DETROIT RIVER.

JAMES GRAHAM, Foot Twenty-first St., Detroit,  
Below Routes of Passenger and Car  
Ferry Lines.

Pockets and Chutes arranged for different types of vessels.

### BEST STEAM COAL.

Large Supplies and every effort to give dispatch, day and  
night. Wide stretch of river for tows, and plenty of  
water at dock at all times.



**GIVE US** a chance to prove that we can coal your boats with quick  
dispatch, and with most satisfactory fuel.

We have Four Large CHUTES on our Docks at AMHERSTBURG, ONTARIO,  
1,000 FEET RIVER FRONT and Day and Night Force.

OUR STOCK CONSISTS OF

**"Keystone" Massillon, Youghiogeny,  
and Best Grades of Hocking Koals.**



Keeping a sharp look-out for  
Shipman's Coal Dock.

**O. W. SHIPMAN,** MAIN OFFICE,  
90 Griswold St., **Detroit, Mich.**

## Cuddy-Mullen Coal Co. Lake Shippers of Steam Coal.

### FUELING DEPARTMENT FACILITIES:

#### CLEVELAND HARBOR—

Car Dumper; Eight Pockets; Three Steam  
Derricks; Lighter.

#### DETROIT RIVER BRANCH—

Amherstburg, Steam Derricks; Sandwich,  
Ten Pockets and Two Steam Derricks.

#### SAULT RIVER BRANCH—

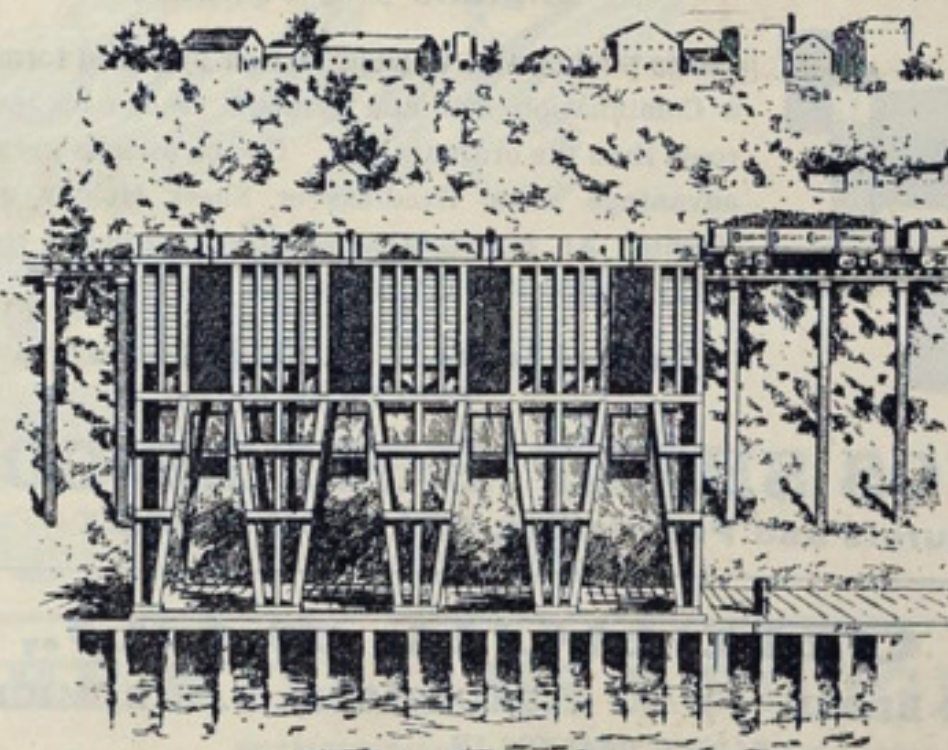
Pocket Dock now under construction.

Good Coal; Courteous Attention; Quick Dispatch.

General Offices: Perry-Payne Bldg., Cleveland, O.

## FUEL DOCKS OF OSBORNE, SAEGER & CO.

Cuyahoga River, just above Superior St. Viaduct, Cleveland, O.



Best  
Youghiogeny  
Steam Coal  
Furnished  
Day or Night.  
No delay as  
Elevated  
Pockets  
are used.

## THE BABCOCK & WILCOX CO. FORGED STEEL WATER-TUBE MARINE BOILER,

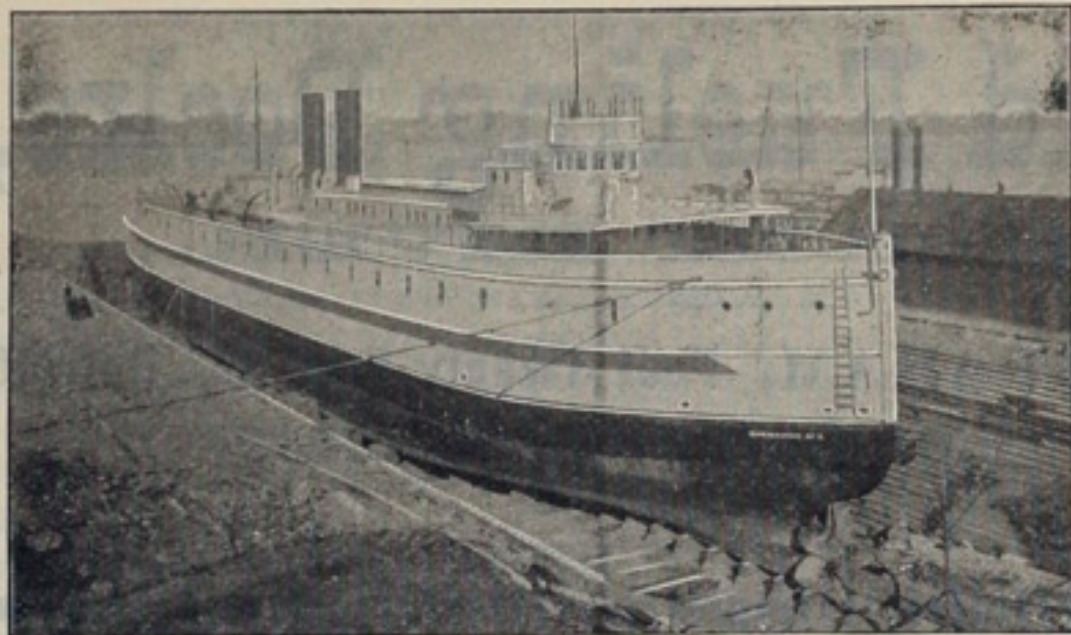
29 CORTLANDT ST., NEW YORK.

Boilers sold to United States Merchant Marine and Yachts - - - - - 16,500 H. P.

Boilers sold to United States Navy - - - - - 7,500 "

The only Water-tube Boiler in the British Merchant Marine 15,500 "





Shenango No. 2, 300 feet long, 54 feet beam.

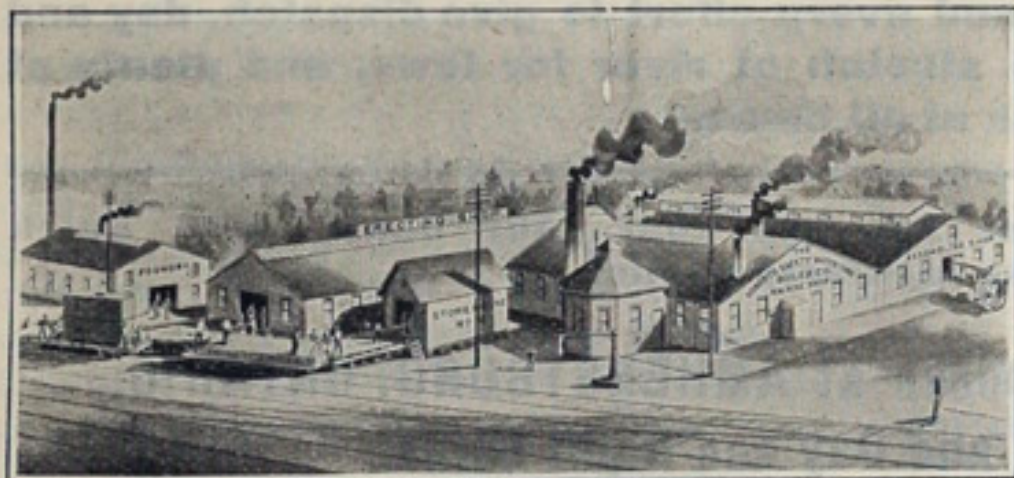
# CRAIG SHIP BUILDING CO.

TOLEDO, OHIO,

## Metal & Wooden Ship Builders.

New Dry Dock—450 feet long, 110 feet wide on top,  
55 feet wide on bottom, 16 feet of Water on Sill.

**Repairs to Metal and Wooden Ships**  
**A Specialty.**



Office of  
AMERICAN  
STEEL BARGE  
CO.

West Superior  
Wis.,  
Oct. 31, 1895.

The Roberts  
Safety Water-  
Tube Boiler Co.,  
39 and 41 Cort-  
landt St., New  
York

Gentlemen:  
Replying to  
yours of the  
28th I am glad

to say that the boiler you furnished us for tug "ISLAY" is giving entire satisfac-  
tion. I have heard no complaint about it whatever, but have heard a good deal in its  
favor. I ride on the boat frequently and must say that I am much pleased with its  
work. Very Truly yours,  
Alexander McDougall, General Manager.

**THE ROBERTS BOILER is the Cheapest, Best and Lasts Longest**

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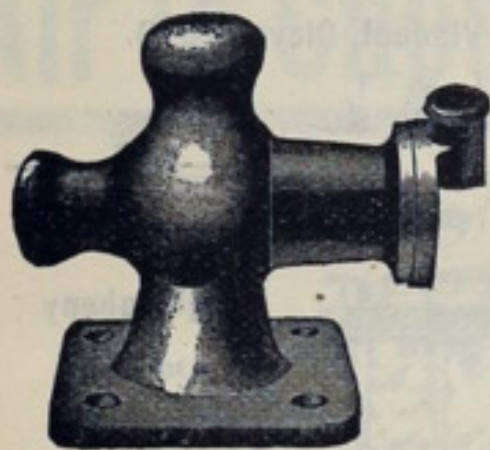
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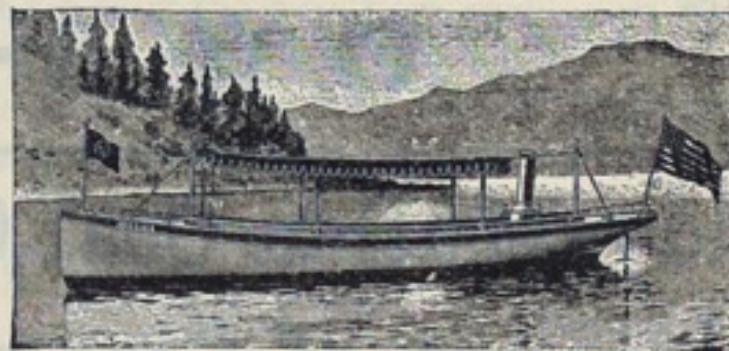
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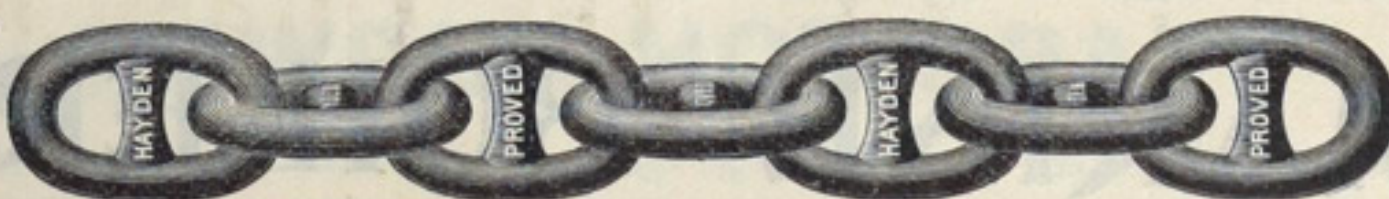
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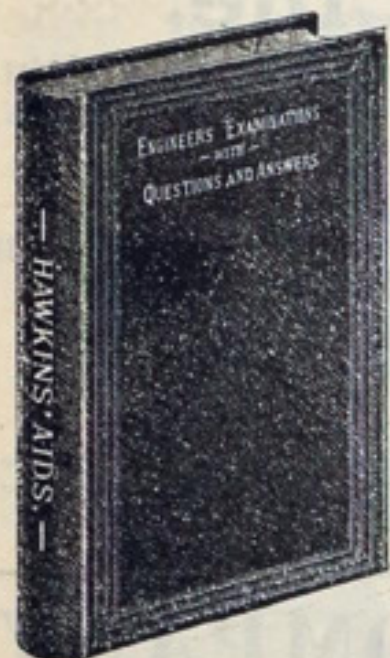
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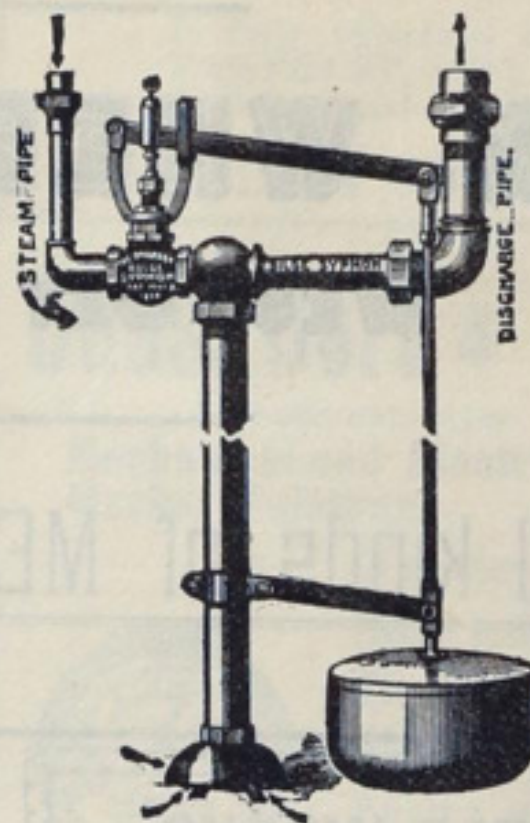
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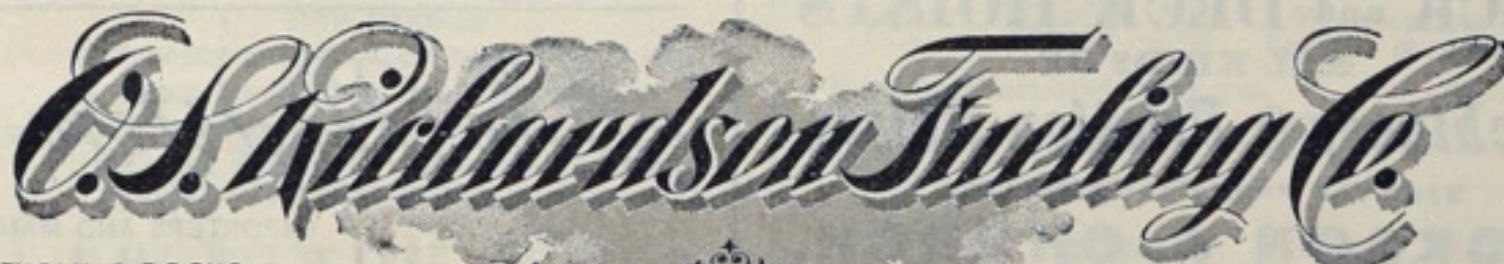
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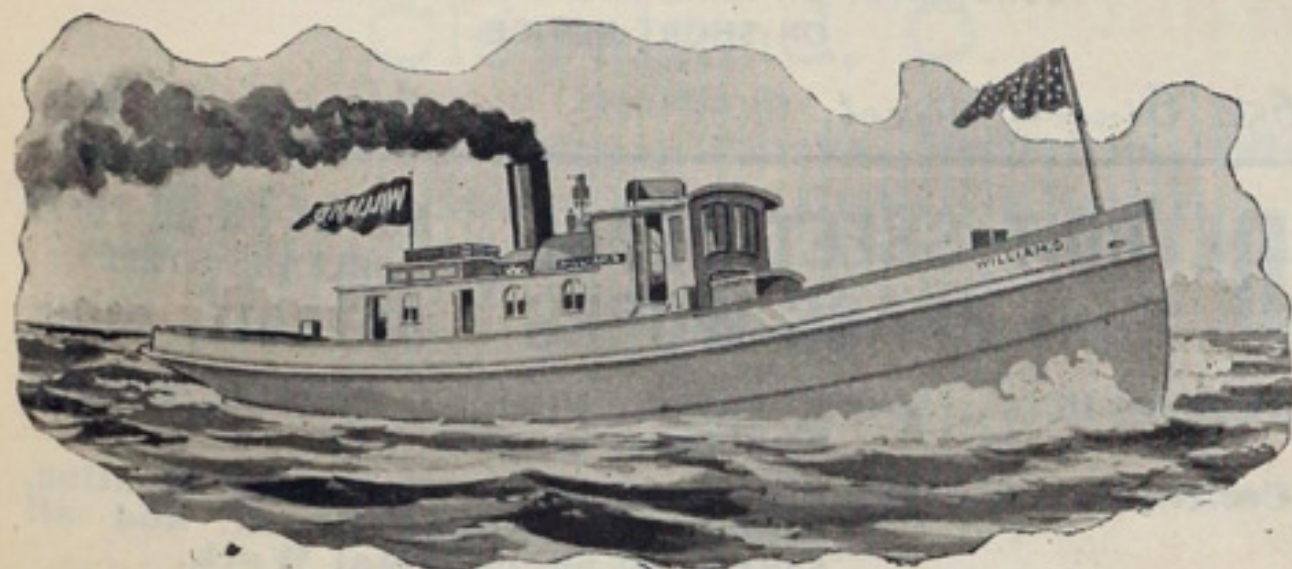
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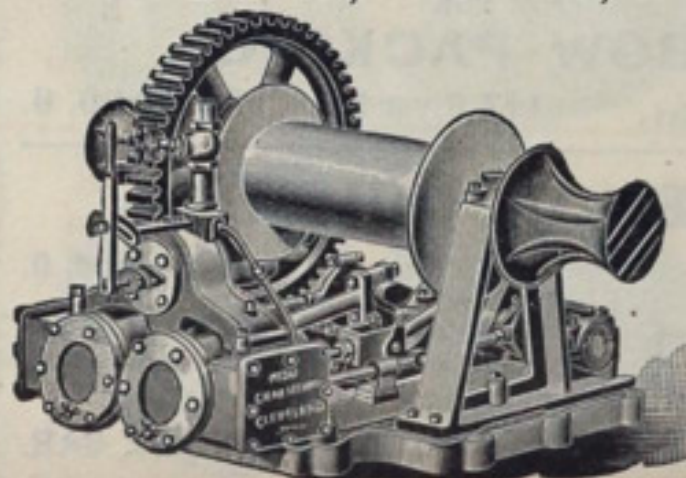
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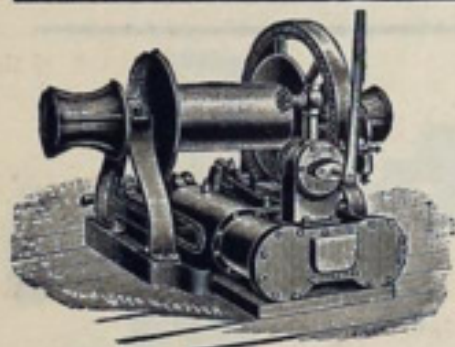
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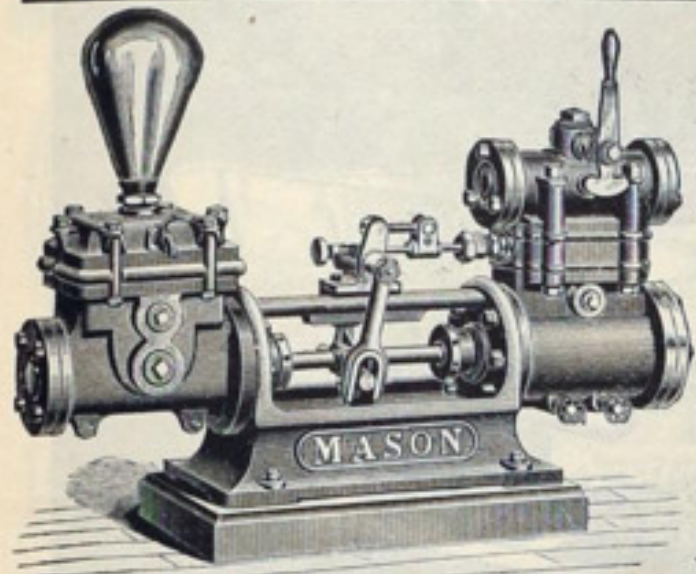
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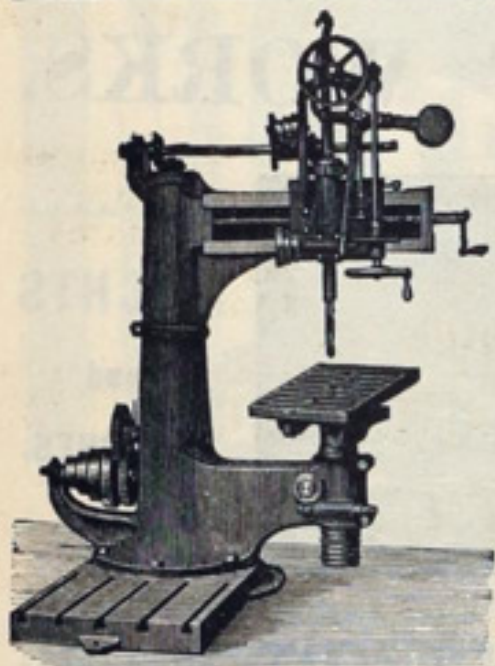
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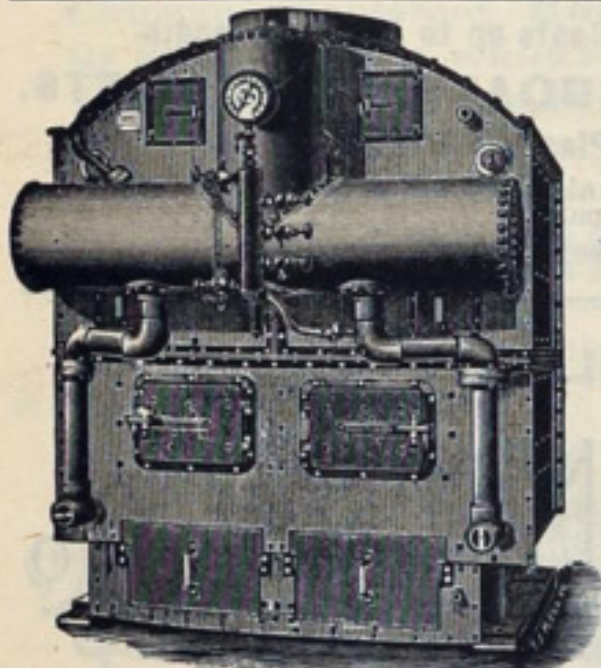
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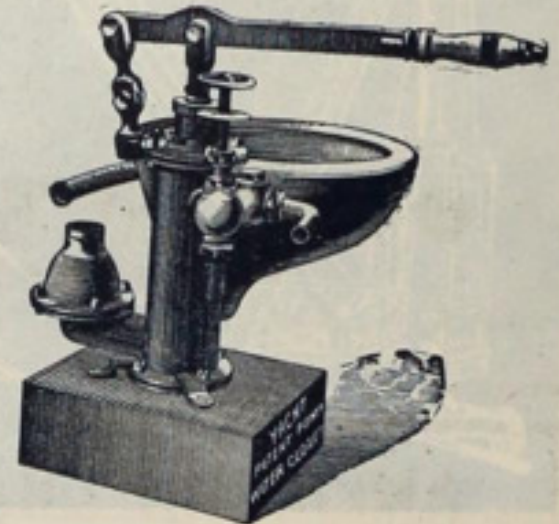
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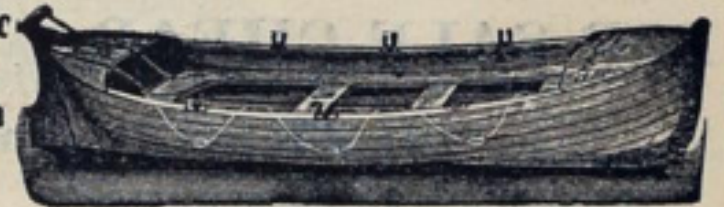
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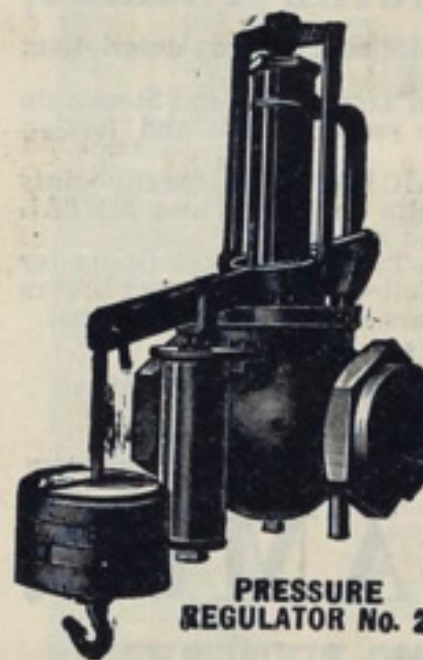
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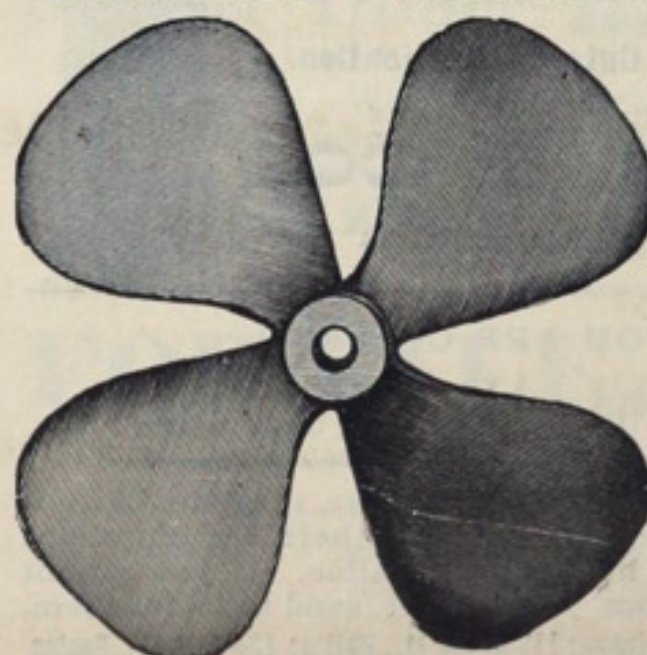
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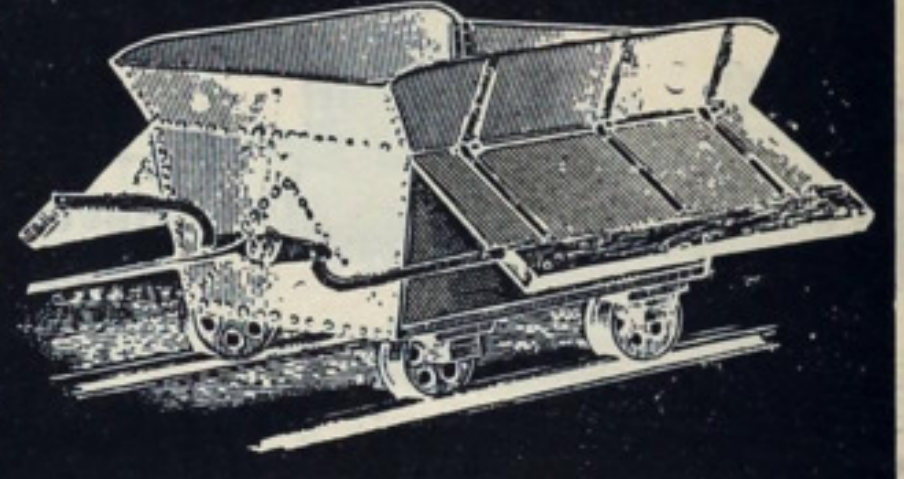
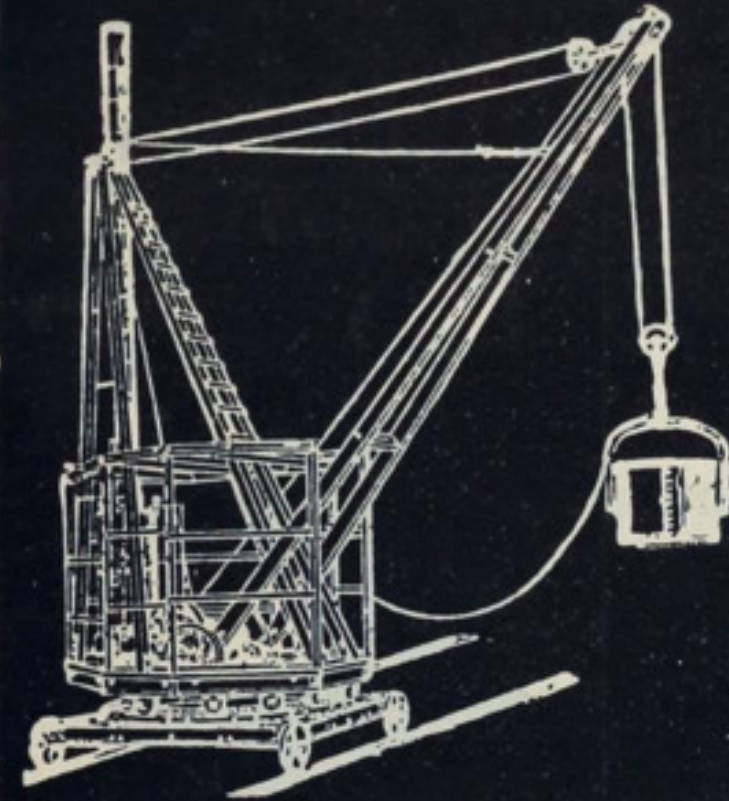
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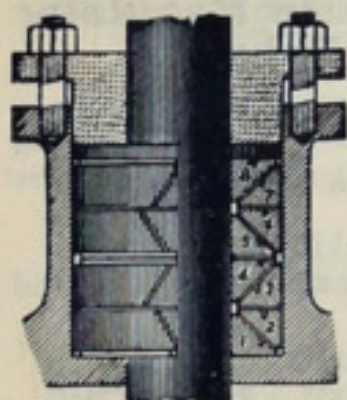
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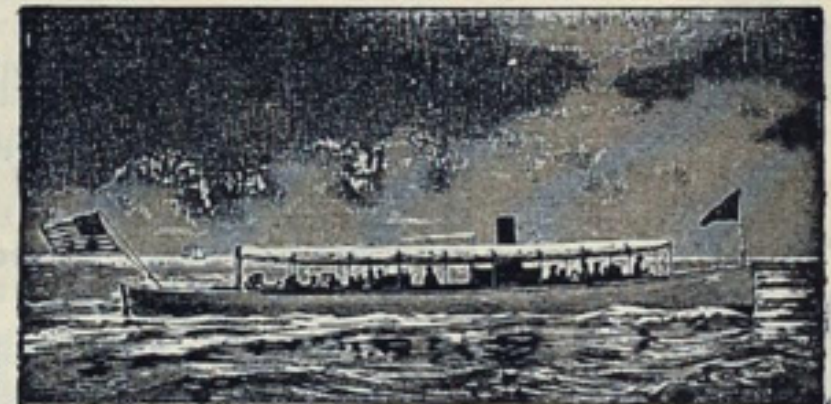
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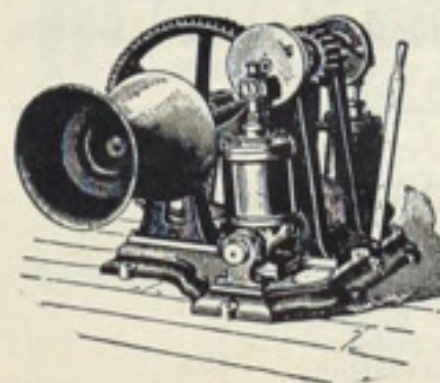
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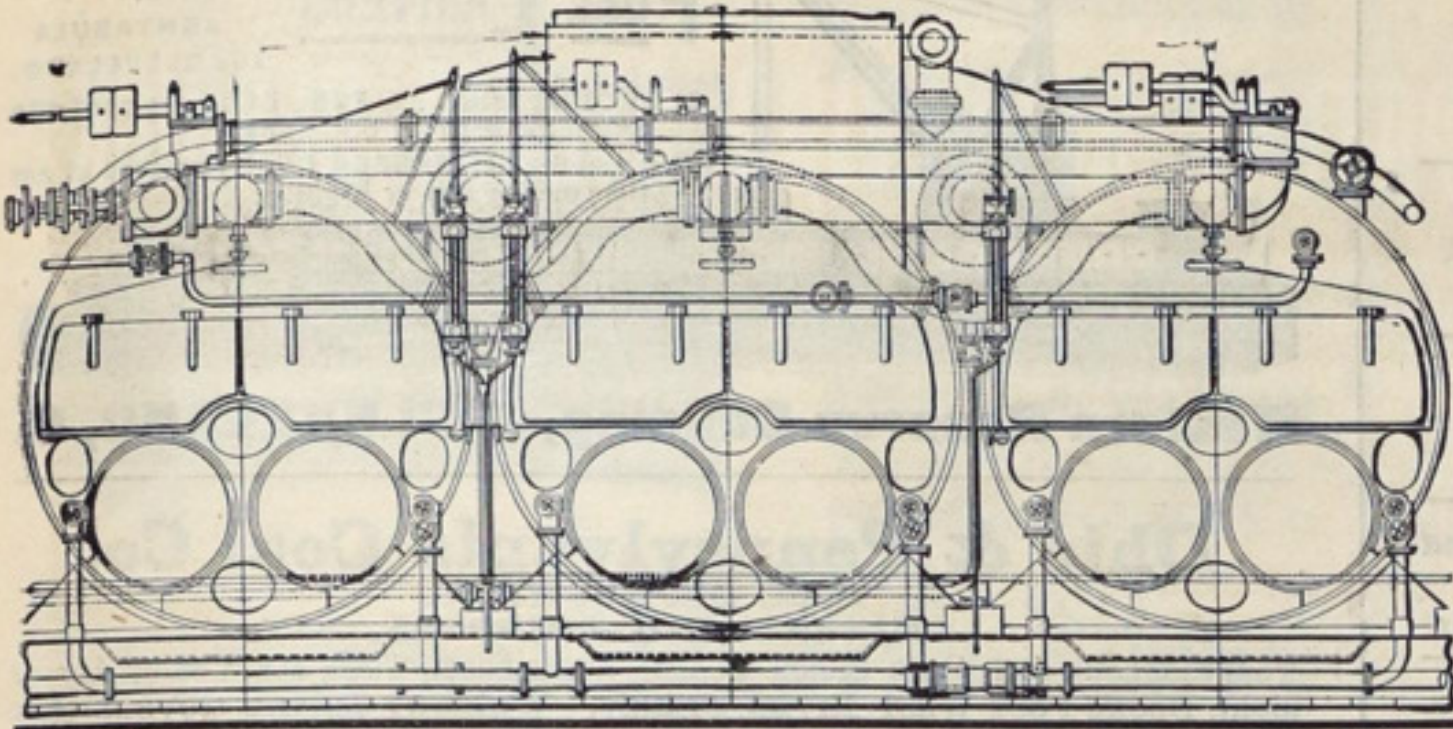
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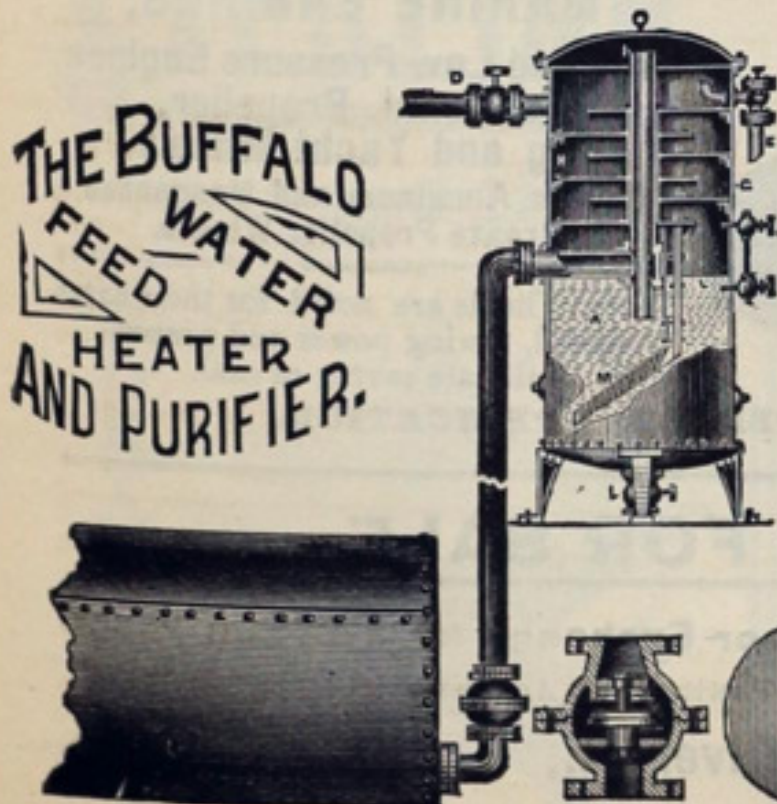
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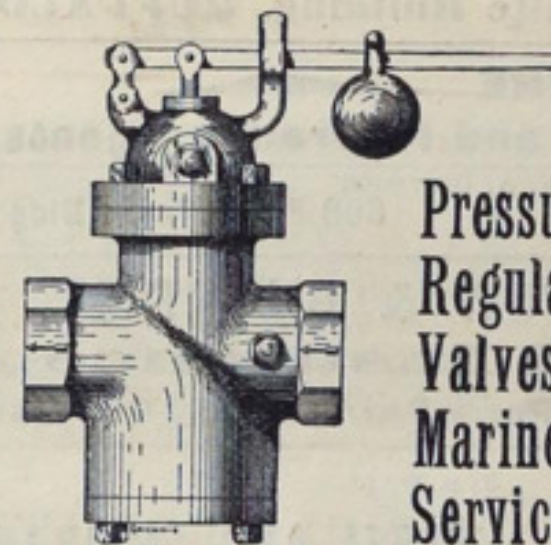
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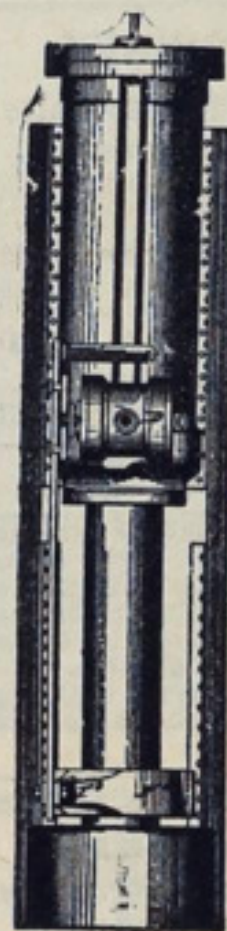
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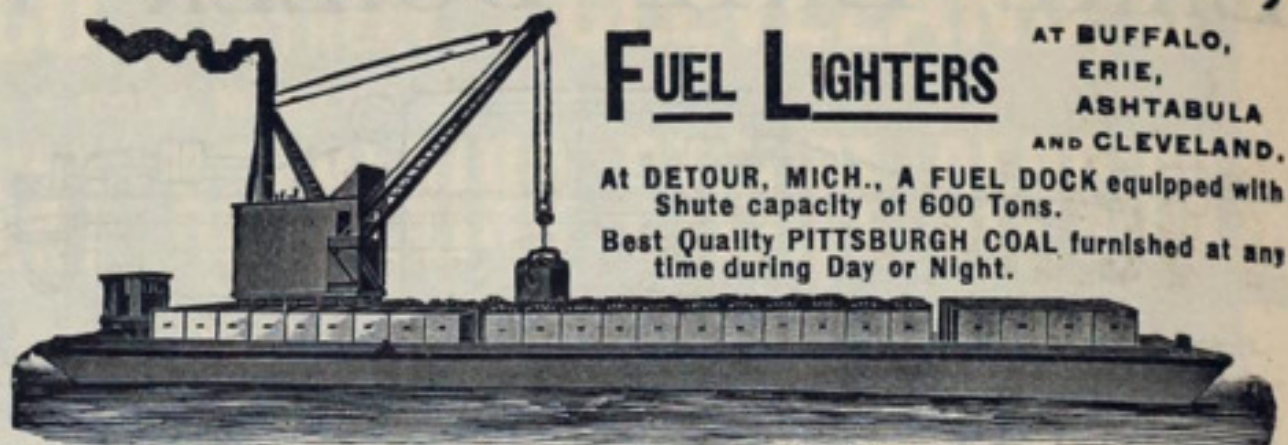
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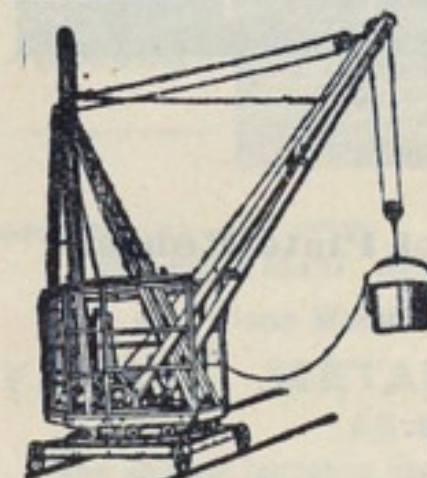
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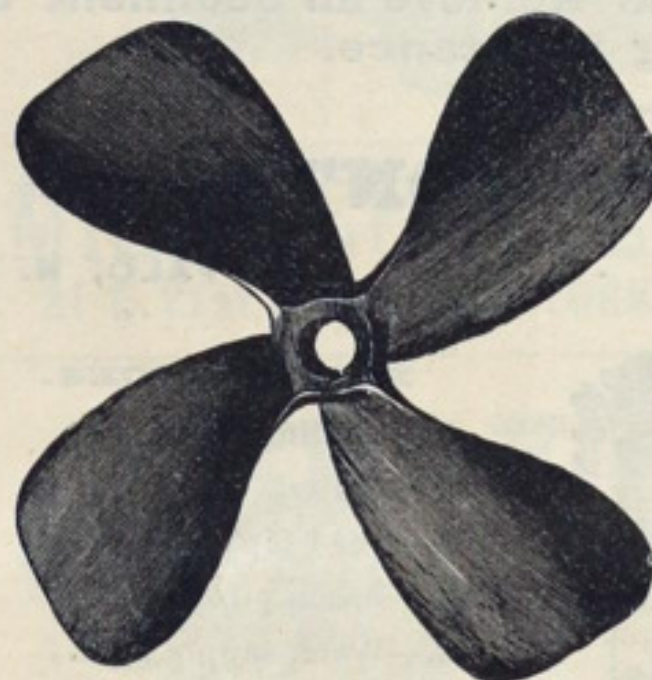
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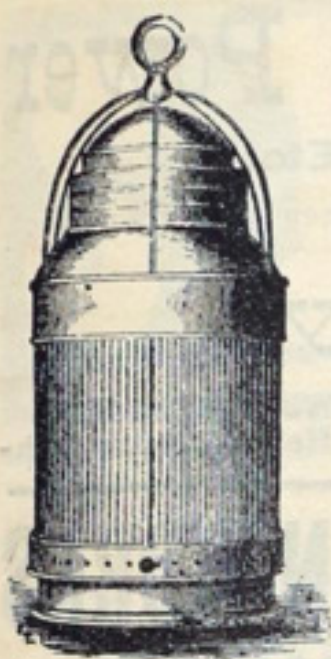
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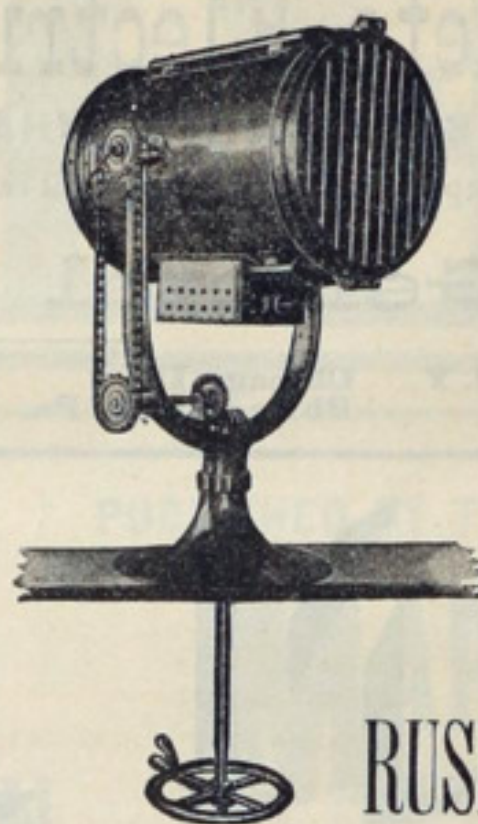
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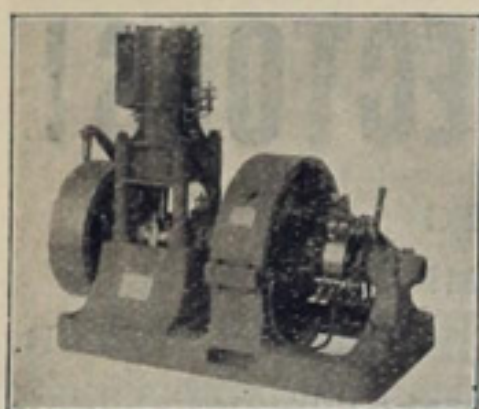
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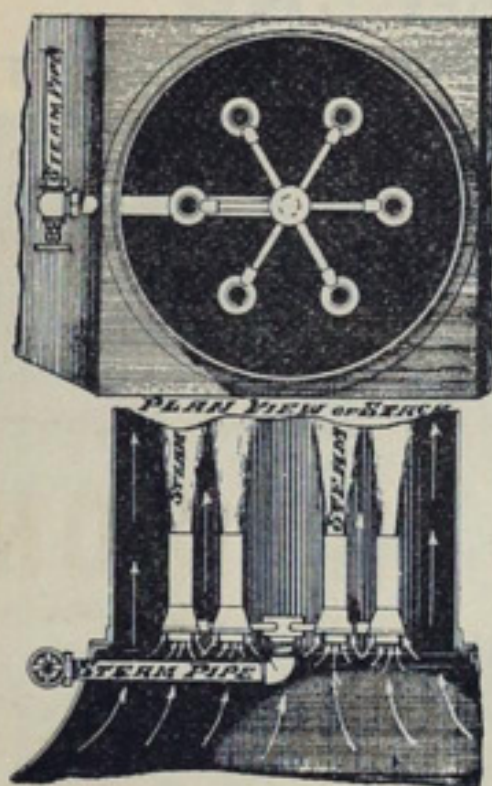
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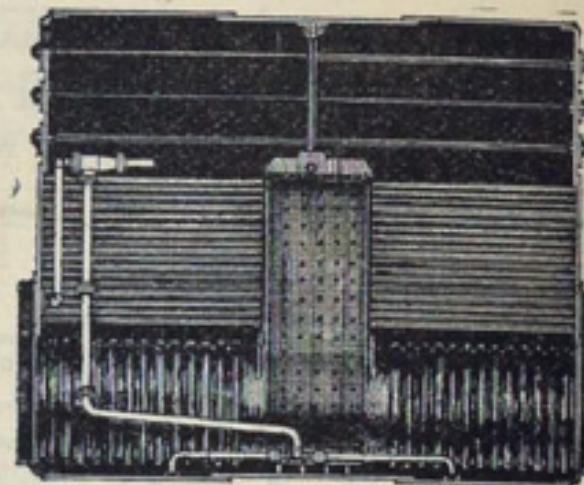
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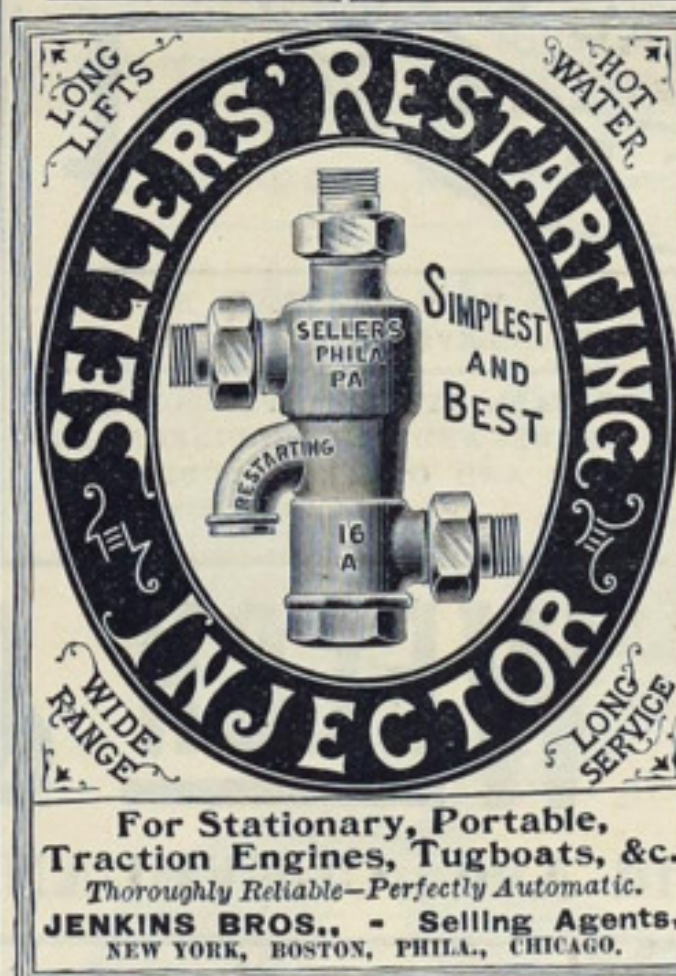
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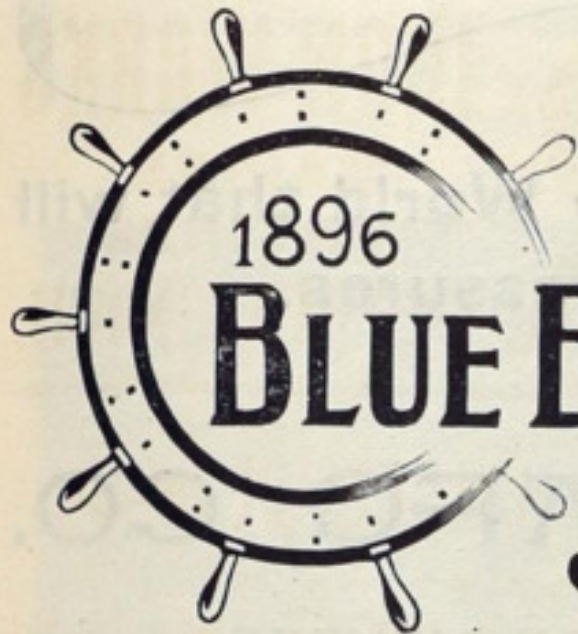
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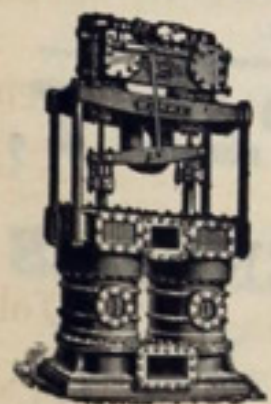
PENBERTHY INJECTORS,  
DAVIS PRESSURE REGULATORS,  
RAINBOW PACKING,  
VALVES AND FITTINGS. VACUUM PACKING.

THE GEO. F. BLAKE MFG. CO.

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## MARINE PUMPS

Single and Duplex Pumps for Boiler Feed,  
Fire or Bilge Service—Vertical and Horizontal.  
Vertical and Horizontal Pumps, Air Pumps  
for Surface and Jet Condensers.



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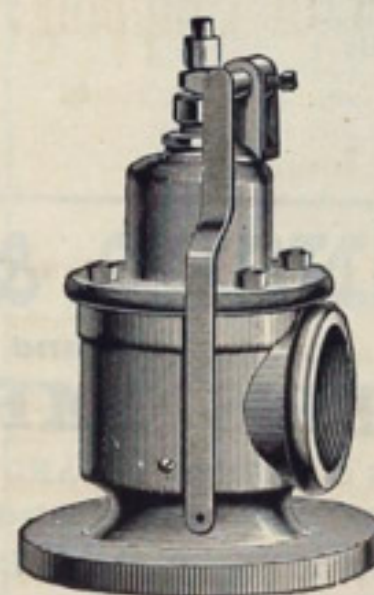
## FRANKLIN HOUSE

ESTABLISHED 1837.

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Only a Block from Woodward &  
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Near All Car Lines.

Per Day, \$1.50. H. H. JAMES, Prop.



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Sole Proprietors and Manufacturers of

Crosby Pop Safety Valves and Water Relief Valves, Crosby Improved Steam Gages, Single Bell Chime Whistles, Patent Gage Testers, Victory Lubricators, and other specialties.

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BRANDEN PUMP VALVES, rubber with wire-coil insertion. Manufacturers of all kinds of Pressure and Vacuum Gages, Water Gages, Gage Cocks, Radiator Cocks, and other Engine and Boiler Fittings and Supplies.

Branch Offices at New York, Chicago and London,  
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## Bertram's Oil Polish, The Marine Polish of the World.

U.S. government in the marine departments. For sale by ship chandlers and engineers supplies stores.

For Brass and all Metal Surfaces it is unequalled. It is cheaper requires less work and retains its brilliancy longer than any metal polish made. Acknowledged the standard of excellence by the BERTRAM OIL POLISH CO., 220 & 22 State St., BOSTON, MASS.

NORTHERN STEAMSHIP CO.  
GREAT NORTHERN RAILWAY LINE.

MR. CHARLES DALE,  
President Peerless Rubber Mfg. Co.  
New York City.

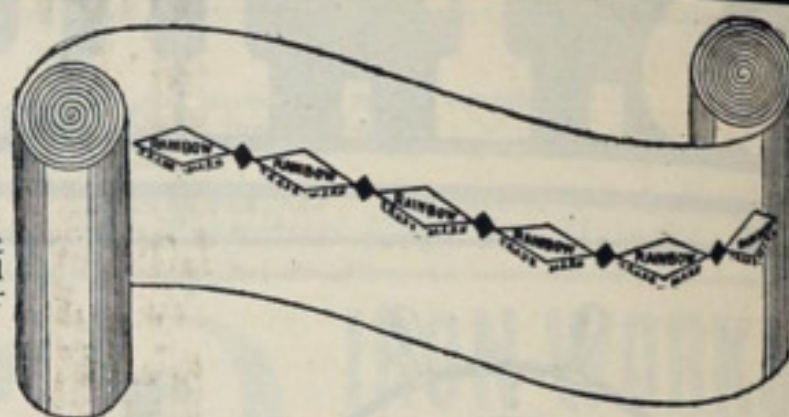
On board Steamship North Land, September 12, 1895.

DEAR SIR:

I have used Rainbow Packing for steam and hot water pressures of 266 lbs. and 500 to 600 lbs. respectively, and find it superior to all others. Before using Rainbow Packing I tried various other packings, including corrugated copper, and found that they would not hold. I therefore tried Rainbow Packing and can cheerfully recommend it as being the only packing for all high pressures in the market to-day.

Respectfully yours,

HENRY J. REYNOLDS, Chief Engineer Steamship North Land.



# RAINBOW

Is the only Packing in the World that will Successfully hold High Pressures.

BEWARE OF IMITATIONS.

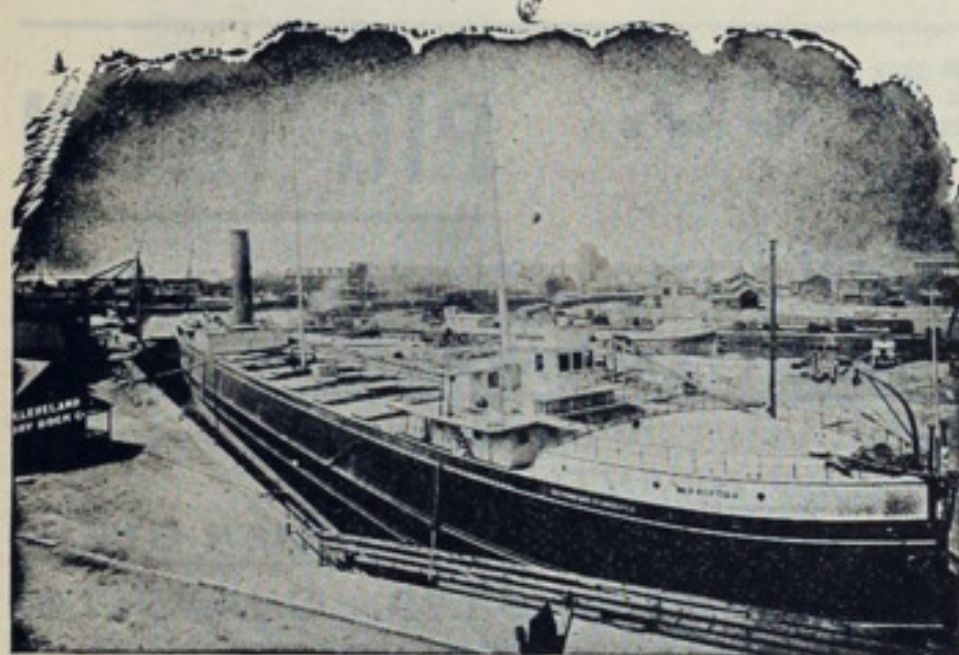
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## THE PEERLESS RUBBER MFG. CO.

16 WARREN ST., NEW YORK.

FOR SALE BY THE LEADING SHIP CHANDLERS AND SUPPLY HOUSES.

## The Cleveland Dry Dock Co.



148 Elm St.,  
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Telephone 1616.  
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REPAIRING A  
SPECIALTY.

Dimensions of Dock:  
Lth. over all, 360 ft.  
Lth. on blocks, 340 ft.  
Width of gate, 50 ft.  
Depth over sill, 20 ft.

Capt. W. W. BROWN  
Sec'y & Mgr.

## H. W. Johns' Boiler and Pipe Coverings.

ASBESTOS  
MATERIALS  
OF  
ALL KINDS,  
Wicking,  
Fibre,  
Mill Board,  
Felt,  
Packing,  
Cement,  
Liquid  
Paints,  
Roof Paints,  
Fire-Proof,  
Paints, etc.

Made in Sections Three Feet Long, to Fit  
Every Size of Pipe.

ABSOLUTELY FIRE-PROOF.



THE CHASE MACHINE CO.  
111 ELM ST. CLEVELAND, O.

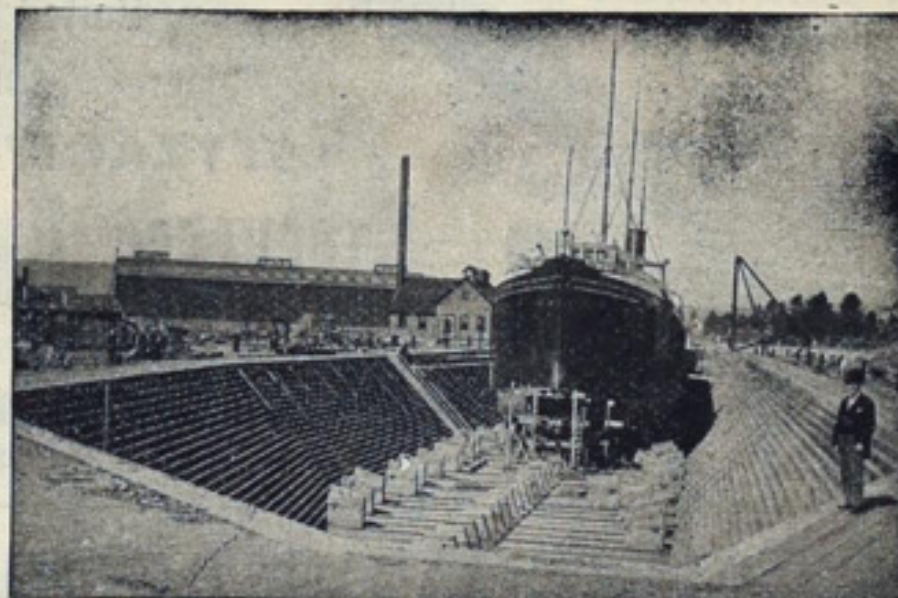
H. W. JOHNS MFG. CO.  
32 SOUTH WATER ST.

## AMERICAN STEEL BARGE CO. STEEL and METAL SHIPS

Of all classes built on the Shortest Possible Notice at our yards at  
*West Superior, Wis., and also at Everett, Wash.*

Photograph of 300 ft. Boat in Dock.

Plates &  
Material  
Always  
on hand  
to Re-  
pair all  
kinds of  
Metal  
Ships in  
Shortest  
Time.



Best  
Quality  
of Oak  
instock  
for Re-  
pairing  
Wooden  
Vessels  
of all  
Classes.

### SIZE OF DOCK.

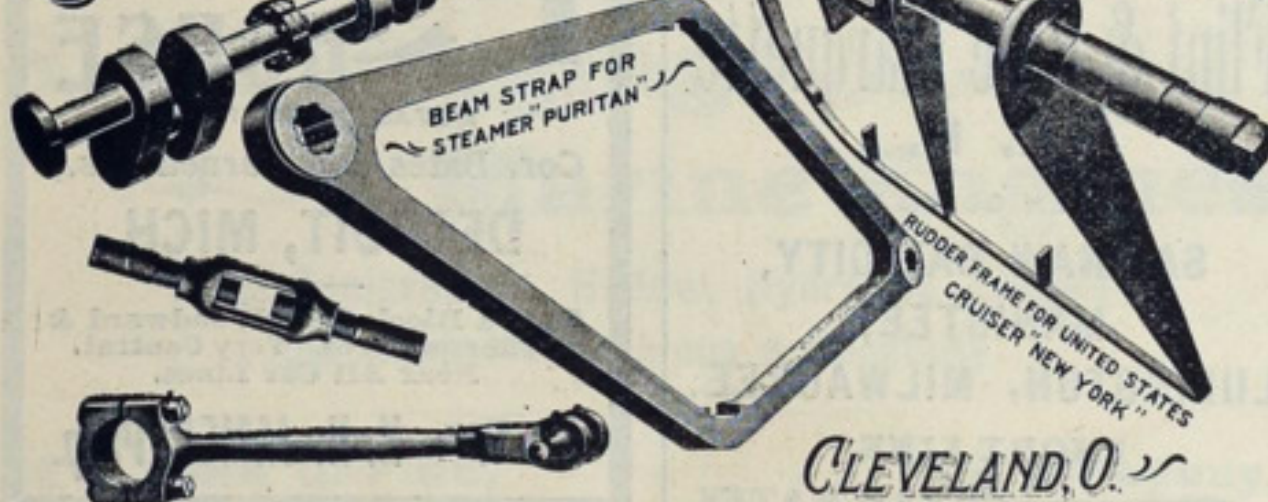
Length, extreme.....537 feet.	Entrance, Top.....55 feet 9 in.
Breadth, Top.....90 " 4 in.	Entrance, Bottom.....50 "
Breadth, Bottom.....52 "	Depth over Sills.....18 "

## LARGEST DRY DOCK ON THE LAKES.

Prices for Repairs and Docking same as at lower lake ports  
**SUPERIOR, WIS.**

A number of Propeller Wheels in stock at Dry Dock.

## CLEVELAND CITY FORGE & IRON CO.



IRON OR STEEL FORGINGS FINISHED COMPLETE, ROUGH MACHINED OR SMOOTH FORGED ONLY, OF ANY WEIGHT.  
COUPLING LINKS AND PINS. PRESSED WROUGHT IRON TURNBUCKLES. CAR IRON SPECIALTIES.

PROPOSALS FOR DREDGING PLANT.—  
U. S. Engineer Office, Morgan Building,  
Buffalo, N. Y., August 7, 1896. Sealed proposals  
for furnishing dredging plant in Niagara River  
will be received here until 11 a. m. September  
7, 1896, and then opened. Information furnished  
on application. T. W. SYMONS, Major,  
Engrs. Sept. 3.

## WHEELER CONDENSER & ENGINEERING COMPANY,

39 and 41 CORTLANDT STREET, NEW YORK.

## WHEELER'S IMPROVED SURFACE CONDENSERS

MOUNTED UPON COMBINED AIR AND CIRCULATING PUMPS.

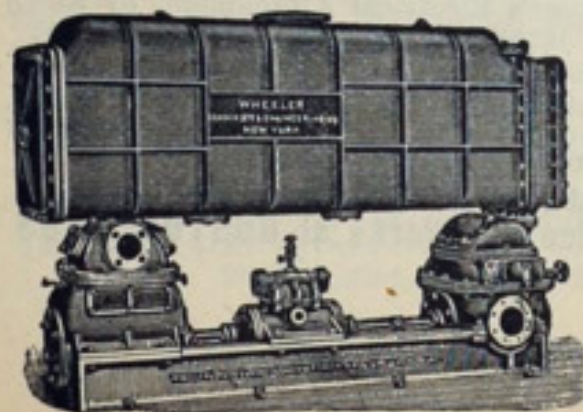
Sole Proprietors and Manufacturers of the

Wheeler Standard Surface Condenser.

Wheeler Admiralty Surface Condenser.

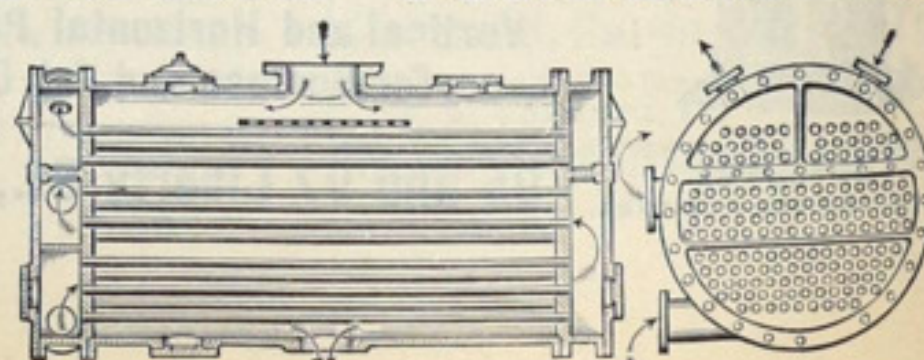
Wheeler Lighthall Surface Condenser.

Volz Patent Combined Surface Condenser  
and Feed Water Heater.



Wheeler Surface Condenser.  
Mounted on Combined Air & Circulating Pumps.

Wheeler's Improved Marine Feed Water Heater.



Patent Combined Surface Condenser & Feed-Water Heater.